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PENNSYLVANIA GEOLOGICAL SURVEY

FOURTH SERIES



OIL AND GAS DEVELOPMENTS

IN

PENNSYLVANIA

IN

1857

By

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF INTERNAL AFFAIRS

GERTRUDE BLATT, Secretary

TOPOGRAPHIC AND GEOLOGIC SURVEY

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1938



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OIL AND GAS DEVELOPMENTS

in
PENNSYLVANIA in 1957

by

William S. Lytle, John M. Bergsten,
Addison S. Cate and Walter R. Wagner

ABSTRACT

Offshore leases totaling 35,710 acres were granted to New York State Natural Gas Corporation in September of 1957 by the Pennsylvania Department of Forests and Waters which has jurisdiction over offshore oil and gas leasing in Pennsylvania's portion of Lake Erie. The leasing of these two blocks gave Pennsylvania the distinction of being the first border state of the Great Lakes to lease offshore acreage. Three successful deep (Middle Devonian or older) new field wildcats drilled during 1957 had no stimulation wells by the end of the year. A wildcat well on the Laurel Hill anticline in Westmoreland County discovered the Johnstown field. The well had an open-flow capacity of 6700 MCF of gas per day from the Onondaga chert (Lower Middle Devonian). A second wildcat in Spring Township, Crawford County produced 916 MCF of gas daily on open-flow from the Red Medina Sandstone (Silurian). A third wildcat was the discovery well in the Clearville area. This well was drilled in Bedford County on one of several anticlines in the Broad Top synclinerium. Production was 1427 MCF of gas per day from the Oriskany Sandstone (Lower Devonian). Major deep development drilling continued in 1957 in Clearfield, Indiana, eastern Jefferson, and Westmoreland Counties. The development of the Rockton, Reed-Deemer, and Jackson-ville fields continued with 65, 9, and 20 gas producers, respectively, completed in each field in fracture type reservoirs. At the end of the year the developed area of the Rockton field was 6700 acres and of the Reed-Deemer field 4000 acres. One hundred seventy-three deep wells were completed in Pennsylvania in 1957, with a total footage of 1,203,283 feet. One hundred twenty-one of these were gas wells, forty-nine were dry holes, and three were drilled for gas storage.

The shallow-sand (Upper Devonian or younger) territory of western Pennsylvania had one new field discovery in Elk County and a new pool discovery in Westmoreland County. The Elk County well, located on the Sabinsville anticline, was dry in the Oriskany and was plugged back to an Upper Devonian pay. This was the discovery well in the Boono Mountain field. The Harvey Lake gas field in Lackawanna County had ten development wells completed during the year, five of which produced gas. Shallow-sand drilling activity increased in 1957 over that of 1956. In all, 955 shallow-sand wells were completed. Of these, 210 were gas wells, 48 were oil wells, 61 were dry holes, and 9 were drilled for gas storage. Six hundred twenty-seven were drilled in connection with secondary-recovery oil operations. In addition to the 955 new wells, nine wells were deepened aside from the secondary-recovery oil operations, and 64 wells were deepened in connection with secondary-recovery oil operations. The total footage for the new and deepened wells was 1,788,302 feet. Secondary-recovery projects in the Bradford field and development drilling in the gas fields dominated the shallow-sand drilling activity during the year.

Oil production decreased from 8,231,000 bbls. in 1956 to 8,210,000 bbls. in 1957. Pennsylvania's proven oil reserves were estimated at 126,490,000 bbls. as of December 31, 1957. Gas production decreased from 118,416,000 thousand cubic feet in 1956 to 107,004,000 thousand cubic feet in 1957. The proven recoverable reserves of natural gas was 853,595,000 thousand cubic feet as of the end of the year. The total footage drilled both shallow and deep was 2,991,585 feet.

INTRODUCTION

The oil and gas developments during 1957 in Pennsylvania are discussed in this progress report. Assembled in Table 1 are the summarized records of the deep wells (Middle Devonian or older) drilled during the year and they are supplementary to those in Tables 1, Bulletin M31, Bulletin M39, Progress Report 150, and Progress Report 151, Fourth Series of the Pennsylvania Topographic and Geologic Survey. Bulletin M31 includes those deep wells completed prior to 1950; Bulletin M39, those drilled between 1950 and 1955; Progress Report 150, those drilled during 1955; and Progress Report 151, those drilled during 1956. Activities in the shallow sands (Upper Devonian or younger) since 1950 are described in Progress Reports 135, 139, 143, 144, 147, 150, and 151 of the Pennsylvania Topographic and Geologic Survey. A classification of both the deep and shallow wells, exclusive of those drilled for gas storage and secondary-recovery purposes, is given in table 2.

ACKNOWLEDGEMENTS

In connection with the preparation of this review, the writers acknowledge the cooperation of G. G. Bauer, Paul W. Garrett, Jr., and the Northeastern Gas and Oil Scouts. Virginia Fairall of the Pennsylvania Bureau of Topographic and Geologic Survey staff did the drafting and assisted with the compiling of the data.

Table 2, Deep and shallow well completion summary, Pennsylvania, 1957

	Oil	Gas	Dry	Total	Percent Successful
Exploratory tests	0	8	25	33	24
Development wells *	<u>48</u>	<u>325</u>	<u>83</u>	<u>456</u>	<u>82</u>
Total	48	333	108	489	78

* Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.

DEEP-SAND DEVELOPMENTS

Assembled in table 1 are the summarized records of the deep wells completed in Pennsylvania during 1957. The location of the wells are shown on the map on plate 1 and the stratigraphic positions of the formations tested on plate 2. A total of 1741 deep wells had been drilled in Pennsylvania by the end of 1957. Prior to 1950 only 36 deep wells had been drilled. Of the 1741 deep wells drilled to date, 971 were gas wells, 700 were dry holes, and 70 were drilled for gas storage.

Of the 157 wells drilled during 1957 to the Oriskany Sandstone, or deeper, 115 were gas wells, 3 were drilled for gas storage, and 39 were dry holes. Another 6 were completed as producers in the Onondaga chert and 10 were abandoned before reaching the Oriskany after drilling below the Tully Limestone (top of Middle Devonian). Out of the 121 deep gas wells completed in 1957, one hundred five were fractured. The total open-flow capacities before fracturing was 91,164 MCF of gas daily compared to 352,444 MCF of gas per day after fracturing. One hundred thirty of the deep wells completed during the year were drilled with rotary tools and forty-three with cable tools.

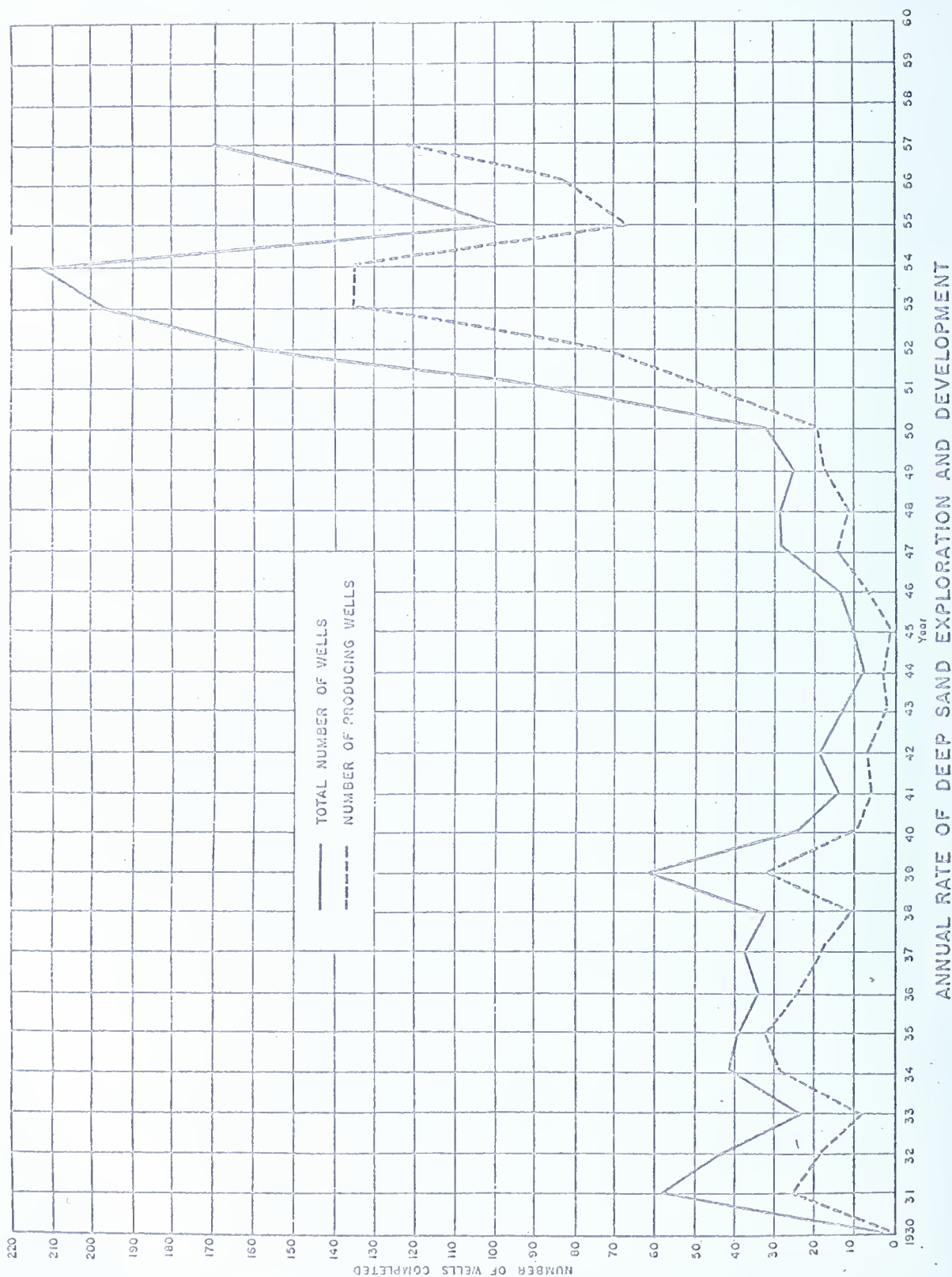
The wide-spread fracturing stimulated exploratory drilling in Clearfield, Indiana, and Jefferson Counties, and was the direct cause of the increase in the number of deep wells drilled during 1957 over that of 1956. A summary of deep well completions in Pennsylvania in 1957 is shown in table 3. Plate 2 is a columnar section and gamma ray log of a deep well in western Pennsylvania showing the stratigraphic positions of the formations penetrated. The annual rate of deep-sand exploration and development since the discovery of the Tioga field in 1930, the first deep-sand field to be opened in Pennsylvania, is shown in figure 1. One hundred seventy-three deep wells were completed in 1957, as compared with 143 in 1956, an increase of 21 percent.

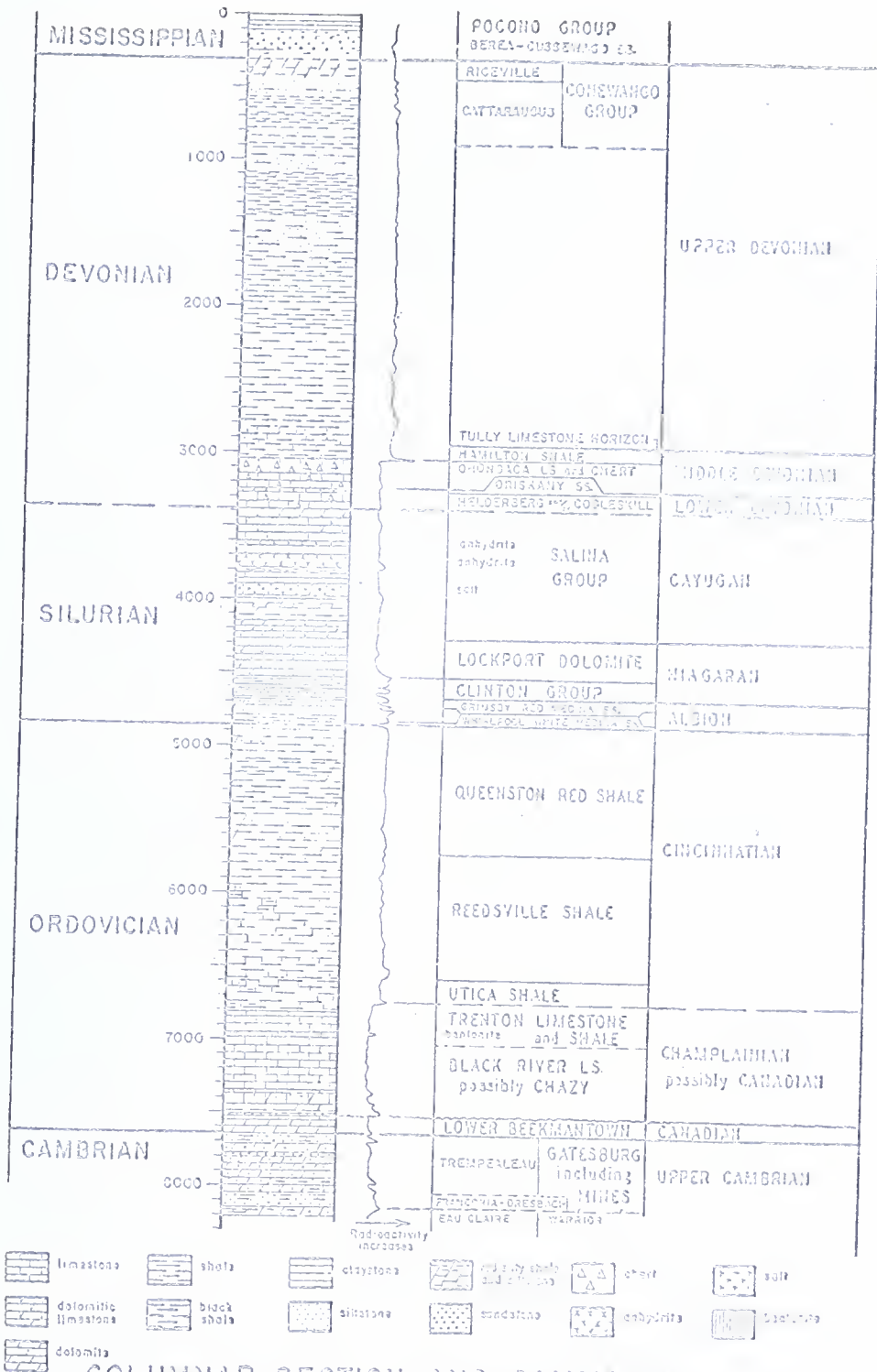
Table 3. Summary of deep well completions, Pennsylvania, 1957

	Development	Development	Wildcat	Wildcat	Storage	Storage	Total
Gas	118		3		2		123
Dry		32		17		1	50
Footage	851,597	216,423	16,123	105,738	8,627	4,775	1,203,283

Meade Field

Development drilling during 1957 in the Meade Oriskany sand gas field of Erie County consisted of three gas wells and three dry holes. The three gas wells had average initial open-flow capacities of 4,311 MCF per day. The largest reported in 1957 was 8,086 MCF of gas per day with a reservoir pressure of 421 p.s.i. in 35 hours. Plate 5 is a structural contour map of the field drawn on top of the Oriskany Sandstone.

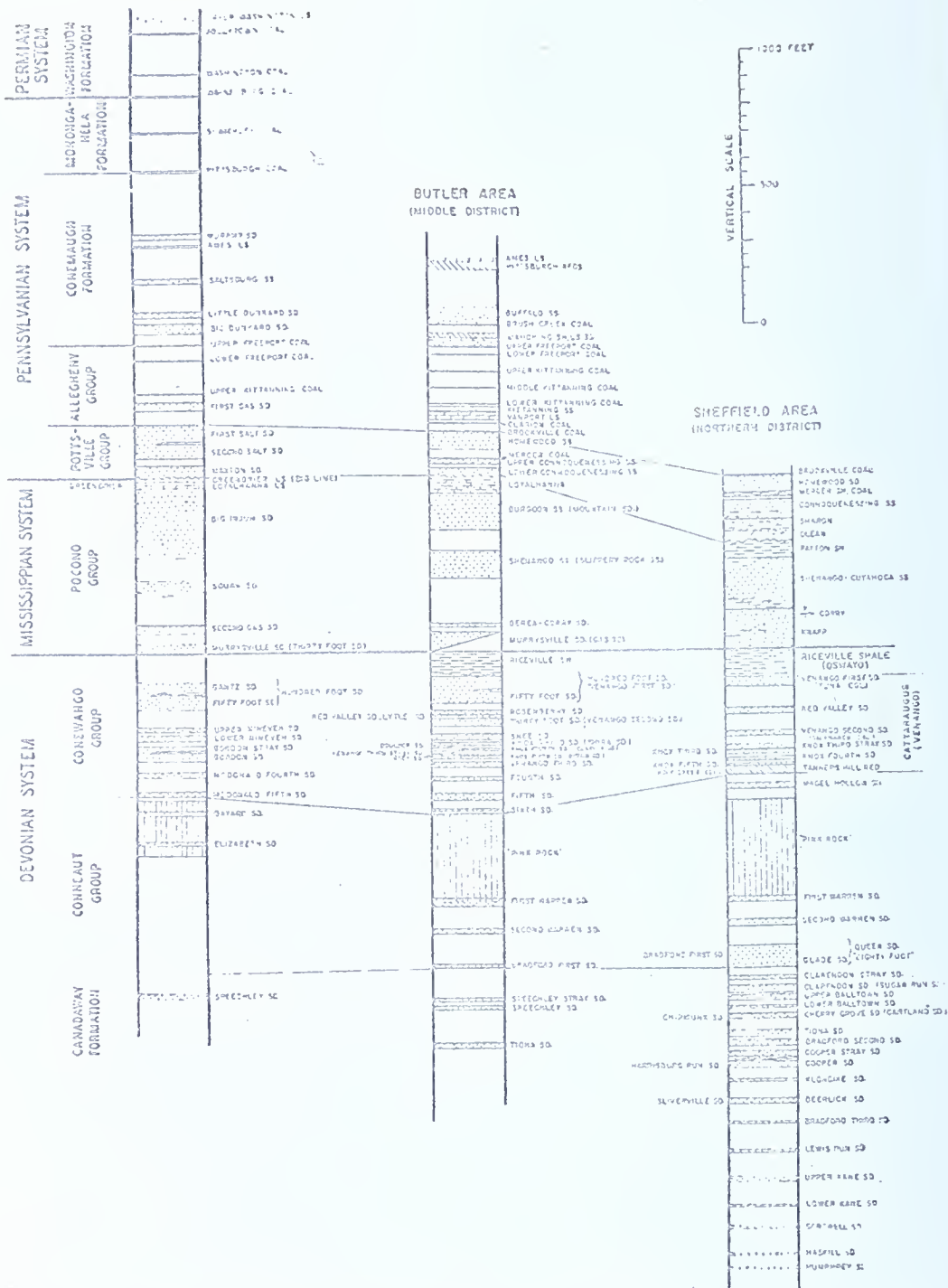




COLUMNAR SECTION AND GAMMA RAY LOG
WESTERN PENNSYLVANIA
OBTAINED IN THE EMMA MCKNIGHT WELL NO. 1
MELBEN OIL COMPANY
PYMATUNING TOWNSHIP, MERCER COUNTY, PA.

GEOL. 1000000, 1000

MONROVIA AREA
(SOUTHWESTERN DISTRICT)



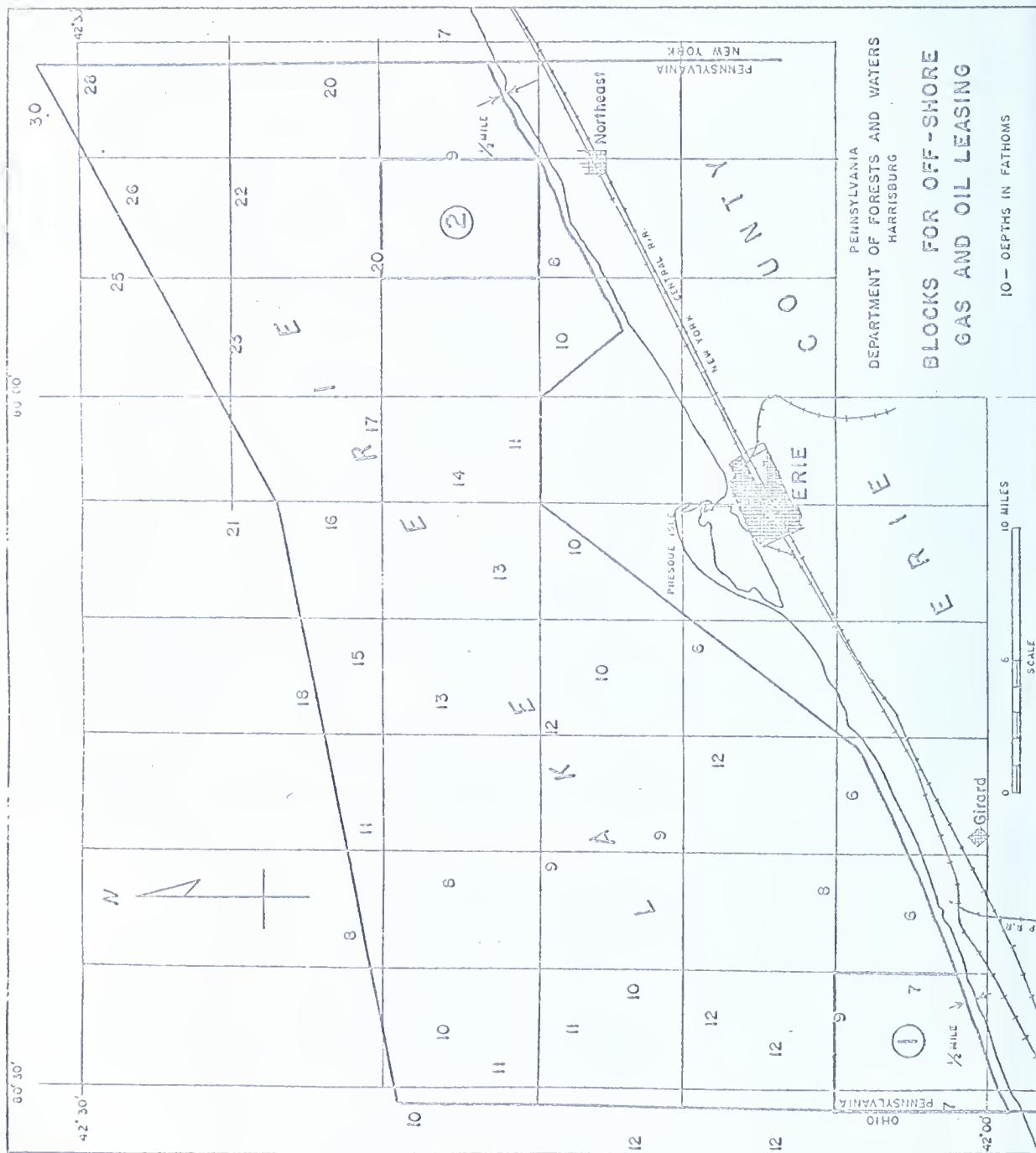
COLUMNAR SECTIONS SHOWING
STRATIGRAPHIC POSITIONS OF OIL AND GAS SANDS
OF WESTERN PENNSYLVANIA

JOHN H. BERGSTEN, 1937

The Meade Gas field in Summit Township, Erie County, was discovered in August 1946 when the Meade No. 1 Well (No. 9, Plate 5) was drilled by the Appalachian Development Corporation. For some time afterwards efforts to expand the field did not meet with much success, and it was not until the latter half of 1954 that exploitation of the field began in earnest. In 1955-56 about 77 wells were drilled in and around the field. To date, (April 1958) there have been a total of 99 wells drilled in search of production in the Meade field, and it is unlikely that there will be more than a very few additional development wells drilled in the future.

The field produces gas from the Oriskany sandstone. One well (No. 24, Plate 5), reports a daily production of a few barrels of oil from the Onondaga Limestone. The accumulation that has been exploited is found on an anticline with domal closure of about 35 feet; productive acreage approximates 1600 acres. The structure contour map drawn on the top of the Oriskany Sandstone shows six isolated "highs" within the field. Production histories of the wells emphasize the separation of these smaller domes within the field - that is to say, initial open-flow potentials, rock pressures, pressure decline rates, and water encroachment are characteristically similar within these individual domal highs. In a general sense the highest wells appear to have had the highest pressures and the greatest open-flow potentials. Faulting cannot be positively demonstrated to have been responsible for any of the accumulation of gas in the Oriskany.

Only a few wells have completely penetrated the Oriskany sandstone in the vicinity of the Meade field, for the general production practice has been to drill only about 10 feet into the sand before completing the well. One well Engell No. 1 (No. 66, Plate 5), was drilled through the Oriskany (25 feet thick) and the gas flow was drowned out by water in the basal part of the formation. All of the other wells which were drilled through the Oriskany sand are on the edge of the productive limits of the field and found non-commercial amounts of gas, or no gas at all. Total thickness of the Oriskany sand in the area has been found to range from 3 to 30 feet. Sample examination reports have not been received from more than a few wells, nor are all records from the operators completely reliable regarding the top of the stratigraphic intervals. Only one well in the field is known to have a gamma ray log made. For these reasons it is impossible at this time to accurately define the character of the producing formation or do more than generalize about the position of at least one suspected unconformity within the Lower Devonian in this region. In a few wells around the northern and eastern edge of the field operators have reported that no sand was present at the horizon of the Oriskany. Certainly it is possible to say instead that the Oriskany is represented in these wells by a fine grained and more tightly cemented sand of lower permeability and porosity than in the producing wells in the center of the field. Furthermore, because the limit of the Oriskany is known to trend in a general east-west direction along the north side of the field it is possible that some of the wells on the edge of the field encountered a facies of the Oriskany in which there was less well-developed porous and permeable strata than in the center of the field, and that in no wells in the immediate vicinity of the field is the Oriskany totally absent. However, the existence of "bald" spots in the Oriskany "blanket" cannot be completely discounted as a possibility. The information available at this time will not permit more than a conjecture; either that the edge of the Oriskany sand in the area at the present time may be coincident with the limit of Oriskany deposition, or that post-depositional erosion has been responsible for the delineation of the sand. There have not been any investigations made



of Oriskany paleogeology, which will explain some of the anomalous situations known to exist in the area; work along these lines will contribute a great deal to geological understanding and subsequent exploitation of petroleum reserves.

Permeability and porosity characteristics seem to be varied in the wells in the Meade field and there appears to be a distinct horizontal separation of intervals within the Oriskany. Also noted have been "channel-ways" permitting more rapid water encroachment in some areas than in others.

Accurate production and total reserve figures are not now available, but estimates for the original amount of gas in the reservoir range from 4,000,000 MCF to 5,000,000 MCF. The Pennsylvania Gas Company has the only pipeline system serving the field, and the daily production of gas from the field has been limited to about 5,000 MCF. Many more wells have been drilled in the field than is commensurate with efficient production and conservation practices. The significance and value of the Meade field, which is but four miles southeast of the center of the City of Erie, is greatly enhanced by its potential as a facility for gas storage.

Activities In Other Fields

Five miles east of the Meade field the Elliptonville field had two well completions. One had a show of oil and gas in the Onondaga Limestone after fracturing, and the second well was gauged at 300 MCF of gas per day and some saltwater after fracturing the Helderberg Limestone.

One dry hole was completed during the year in the Leidy pool of the Leidy field in Clinton County. This pool produced 605,000 MCF of gas during 1957 from the Oriskany Sandstone. Arrangements are now being made to convert the Leidy pool into a gas storage pool. The Kanawack and Downs pools in the Leidy field produced 106,000 MCF during the year. Most of the activity in the Leidy field was in the Greenlick pool where six gas wells were completed with average initial open-flow capacities of 7,803 MCF per day. The largest reported well in 1957 had an initial open-flow of 40,000 MCF of gas per day.

Six gas wells and one dry hole were completed in the Benezette-Driftwood Oriskany sand gas field of southeastern Elk County during 1957. This drilling extended the field to the southwest. The six gas wells had average initial open-flow capacities of 2,427 MCF per day after fracturing. The Hicks Run pool, discovered in 1956 in the Benezette-Driftwood field, had three completions, two gas wells and one dry hole.

The Rockton Onondaga chert-Oriskany Sandstone gas field of northwestern Clearfield County continued to be the center of the development drilling activity in the state. Sixty-five gas wells and eight dry holes were drilled during 1957. The 65 gas wells had average initial open-flow capacities after fracturing of 6,205 MCF per day. A successful outpost well in the Home Camp area, located by surface and subsurface geology on the northwest flank of the Chestnut Ridge anticline, extended the producing area northward early in 1957. The well, Barney Bailey No. 1, drilled by New York State Natural Gas Corporation (No. 6 in table 1), had an initial open-flow capacity of 8,620 MCF of gas per day, after fracturing the Onondaga chert-Oriskany Sandstone section, at a reservoir pressure of 3,700 p.s.i. in 15 hours. The Raymond S. Blum No. 1 was the largest

well in the field with an initial open-flow capacity of 60,000 MCF of gas per day. By the end of the year the developed area included about 6700 acres. The Reed-Deemer field just southwest of the Rockton field and following the same trend (the Chestnut Ridge anticline) had twelve completions, nine gas wells and three dry holes. The average initial open-flow capacities of the nine gas wells was 800 MCF per day after fracturing. The developed area now includes about 4,000 acres.

The Jacksonville field, discovered in 1956, producing from the Onondaga chert-Oriskany Sandstone section in southwestern Indiana County, had 20 gas wells and six dry holes completed during 1957. The average initial open-flow capacities of the 20 gas wells was 1,903 MCF per day after fracturing. About 15 miles east of this field the Holo Onondaga chert-Oriskany Sandstone gas field had 2 gas wells completed and two dry holes. The average initial open-flow capacities of the two wells was 3,249 MCF per day after fracturing.

In south-central Westmoreland County five gas wells and two dry holes were completed in the St. Boniface Chapel Onondaga chert-Oriskany Sandstone gas pool which was discovered in 1956. Two of the gas wells were completed in the Onondaga chert section. After fracturing, the initial open-flow capacities of the five gas wells averaged 7,410 MCF per day.

Increased wildcatting along producing trends and in areas that have never produced has paid off in 1957 with the completion of three successful new field wildcats. Older formations have been the objective of many tests during the year although the Oriskany Sandstone is still the main target. The first successful deep wildcat to be completed during 1957 was located on the basis of seismic analysis. John E. Beck No. 2, drilled by Snee and Eberly in Ligonier Township, Westmoreland County (No. 171, Table 1) on the Laurel Hill anticline, was completed in a fault block in the Onondaga chert at a depth of 7,540 feet with an initial open-flow capacity of 6,700 MCF of gas daily. Two offsets to this Johnstown field well were dry. One well encountered salt water in the Onondaga chert and the second well bottomed at 8,050 feet in a highly faulted section of Middle Devonian shales. The second successful wildcat was Indian Spring No. 1, drilled by George Hall, et al, in Spring Township, Crawford County (No. 91, table 1). After drilling into the Albion (Lower Silurian) the well bottomed at 3,690 feet and fractured in a Red Medina gas pay at 3,665 to 3,690 feet. The well had an initial open-flow capacity of 916 MCF of gas per day after fracturing and a reservoir pressure of 1122 p.s.i. in 36 hours. No confirmation well had been drilled by the end of the year. The third successful wildcat (D. H. Miller No. 2, drilled by New York State Natural Gas Corporation) was located by surface and subsurface geology on one of several minor anticlines in the Broad Top synclinorium in Monroe Township, southeastern Bedford County. This was drilled on steeply dipping beds between two dry holes. The well bottomed in the Oriskany, and, after fracturing, the initial open-flow from the Oriskany was 1,427 MCF of gas per day with a reservoir pressure of 1,920 p.s.i. in four days.

Eleven important unsuccessful new field wildcats were drilled in Pennsylvania during 1957 (plate 1 and table 1). One unsuccessful test was completed in each of Blair, Columbia, Erie, Snyder, and Susquehanna Counties. The Edward Bigley No. 1 well in Blair County spudded in Clinton (Middle Silurian) and bottomed in Juniata (Upper Ordovician) at a total depth of 1,700 feet on the northwest flank of the southwest plunging Sinking Valley anticline. The Knarr No. 1 in Columbia County, after finding the Oriskany sandstone absent, bottomed

in the Tonoloway (Upper Silurian). This well was located near the axis of the Shade Mountain anticline. Ethridge No. 1 in Erie County logged 760 feet Middle Ordovician limestones, and encountered saltwater in the Helderberg Limestone (Lower Devonian), and in the Gatesburg Sandstone (Upper Cambrian). The Moyer No. 1 well in Snyder County, located west of the anthracite coal fields on the northwest flank of the Shade Mountain anticline in the closely folded Appalachian Mountains, bottomed in the Tonoloway Limestone (Upper Silurian), finding saltwater in that formation. The Kolley-Hendrickson No. 1-A in Susquehanna County, an offset to a wildcat in northeastern Pennsylvania on the Friendsville dome of the Rome anticline, encountered small shows of gas in the Middle Devonian section and bottomed in the Helderberg Limestone.

Two Helderberg tests in Clearfield County on the Laurel Hill anticline were unsuccessful. McKean County had two unsuccessful tests. One bottomed in the Helderberg Limestone (Lower Devonian) and the second one in the Queens-ton Shale (Upper Ordovician) after recording 115 feet of salt in the Salina (Upper Silurian). Warren County had two unsuccessful tests. One, a Queens-ton Shale test, recorded a gas show in the Red Medina Sandstone (Lower Silurian). The second test bottomed in the Gatesburg Sandstone (Upper Cambrian). The latter also had shows of oil in the Lockport Dolomite and the Red Medina Sandstone, both of which are of Silurian age.

SHALLOW-SAND DEVELOPMENTS

The increase in drilling activity in the shallow-sand territory of western Pennsylvania which occurred in 1956 continued into 1957. In all, 955 shallow-sand wells were completed, as compared with 911 in 1956. Of these, 210 were gas wells, 48 were oil wells, 61 were dry holes, and 9 were drilled for underground gas storage. Nine wells were deepened outside the secondary-recovery operations. Drilling in connection with secondary-recovery oil operations amounted to 627 new wells and an additional 64 wells were drilled deeper. The total footage for the new and deepened wells was 1,788,302 feet.

Table 4 shows the shallow-sand well completions in western Pennsylvania, exclusive of those drilled in connection with underground gas storage or secondary-recovery oil operations. The results obtained in 1957 by deepening nine shallow-sand wells are shown in table 5. The three columnar sections appearing in plate 3 show the stratigraphic positions of the Upper Devonian and higher oil and gas sands of western Pennsylvania from southwest to northeast along the trend of the producing belt shown in plate 1.

The 210 new gas wells had a total initial open-flow capacity of 138,329 MCF per day, as compared with the total initial open-flow capacity of 86,913 MCF per day for the 185 gas wells completed in 1956. The figures used for 1957, as well as 1956, are those that were obtained after fracturing where that method of well completion was employed. Of the 210 new gas wells completed, 121 were fractured. The combined initial open-flow of the 121 wells was 83,821 MCF per day after fracturing, as compared with 2,997 MCF per day before fracturing. Of the six gas wells deepened, all six were fractured. The combined initial open-flow of these six wells was 2,602 MCF per day after fracturing as compared with 35 MCF daily before fracturing. The 48 new oil wells completed

TABLE 4. Shallow-Sand Well Completions in Pennsylvania in 1957 *

County	Total		Gas		Oil		Dry			
	No. of Wells	Aver. Total Depth (Feet)	No. of Wells	Aver. Init. Open Flow (M.Cu.Ft. Per Day)	Aver. Total Depth (Feet)	No. of Wells	Aver. Init. Prod. (Bbls. Per Day)	Aver. Total Depth (Feet)	No. of Wells	Aver. Total Depth (Feet)
Allegheny	3	3540	2	10	3583	—	—	—	1	3456
Armstrong	85	3016	82	750	3004	—	—	—	3	3355
Beaver	2	1247	1	50	1250	1	.25	1234	—	—
Blair	1	1700	—	—	—	—	—	—	1	1700
Butler	5	2023	3	79	1672	1	3	1400	1	3700
Clarion	16	2132	9	430	2409	5	1	1128	2	3033
Clearfield	9	1759	1	3033	2394	—	—	—	8	1579
Elk	2	2328	2	1273	2328	—	—	—	—	—
Forest	29	1232	7	76	1615	10	2	884	12	1418
Greene	3	2241	—	—	—	—	—	—	3	2241
Indiana	38	3164	30	612	3046	—	—	—	8	3509
Jefferson	35	3057	33	554	3064	—	—	—	2	2936
Juniata	1	2253	—	—	—	—	—	—	1	2253
Lackawanna	7	3265	5	813	3173	—	—	—	2	3494
Luzerne	3	2930	—	—	—	—	—	—	3	2930
Lycoming	1	820	—	—	—	—	—	—	1	820
McKean	3	1500	2	13	1756	1	.6	903	—	—
Potter	5	1748	3	10	1733	—	—	—	2	1770
Venango	13	782	1	10	700	10	1	790	2	783
Warren	23	713	3	75	903	20	7	690	—	—
Washington	7	2563	4	241	2701	—	—	—	3	2360
Westmoreland	<u>28</u>	<u>3547</u>	<u>22</u>	<u>1119</u>	<u>3705</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>6</u>	<u>2970</u>
Total	319	2505	210	656	2907	48	3.7	829	61	2391

* Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.

in 1957 had a total initial production of 175.8 barrels per day as compared with the total production of 53.4 barrels per day for the 19 new wells completed in 1956.

Shallow-Sand Gas Developments

The Logan L. Bond well No. 1 of the New York State Natural Gas Corporation, a deep test in Elk County (No. 95, table 1) encountered shallow gas. The location of this well on the southeastern flank of the Sabinsville anticline was picked after a study of surface and subsurface geology and a seismic survey. After drilling to the Silurian and finding no additional gas it was plugged back and fractured in the Elk sand. The well was completed as a shallow, new field wildcat with an open-flow capacity of 539 MCF of gas per day, and reservoir pressure of 430 p.s.i. At the close of the year this field (the Boone Mountain field) covered about 300 acres with three gas producers and two dry holes.

In Westmoreland County H. E. Leighty No. 1 (No. 167, table 1), a deep test, was completed as a new pool discovery in a shallow horizon after finding saltwater in a highly faulted Onondaga section (Middle Devonian). This well, located on the west flank of the Chestnut Ridge anticline, was plugged back, and completed in the Second Bradford sand, and had an open-flow capacity of 170 MCF of gas per day after fracturing. No additional offsetting wells have been drilled.

The Harvey Lake shallow gas field along the west-central border of Lackawanna County (discovered in 1956 by the Lawrence R. Richards well No. 1), had 10 completions during the year, five of which were gas wells and five dry holes. Production is from the Chemung Formation (Upper Devonian). The largest well had an initial open-flow capacity of 3,425 MCF of gas per day with a reservoir pressure of 685 p.s.i.

Wide-spread fracturing of the Speechley and Bradford Third sands continued in the shallow-sand fields. The greatest activity in the shallow-sand gas belt of western Pennsylvania was concentrated in Armstrong County in 1957 as it was in 1956. Eighty-two new gas wells were completed in this county, 70 of which were fractured. Fracturing raised the combined initial open-flow capacities of the 70 new gas wells from 1,140 MCF per day to 45,241 MCF per day, or more than a 39-fold increase. There were 27 new gas wells fractured in Jefferson County, raising the combined initial open-flow capacities of these wells more than 50 times. Nine wells were drilled for underground storage of gas; six in the Oakford storage field in Westmoreland County, two in the Bunola storage field in Allegheny County, and one in the Donegal storage field of Washington County.

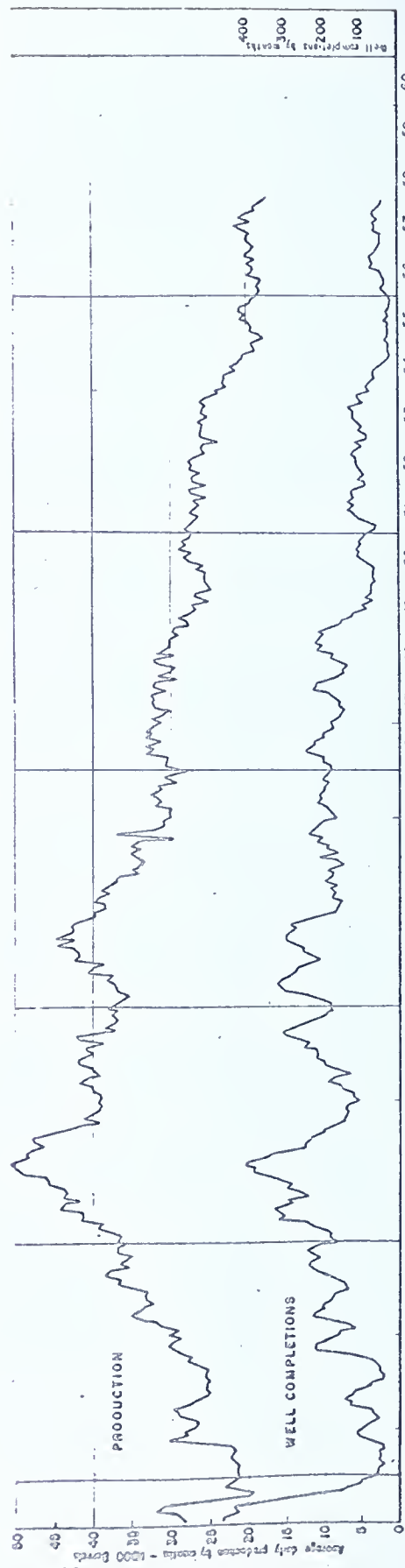
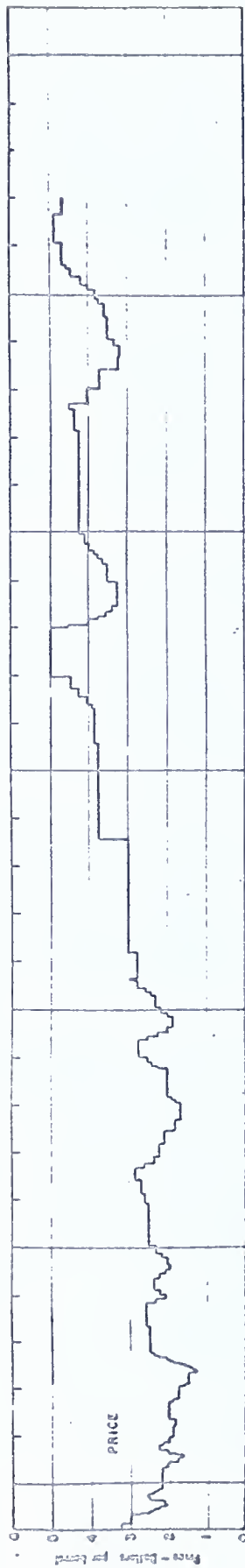
Shallow-Sand Oil Developments

Two shallow Upper Devonian wildcats were drilled in western central Venango County, but encountered only shows of oil and gas. The greatest activity in the shallow-sand oil belt of western Pennsylvania, aside from the secondary-recovery projects, occurred in Warren County. Six development wells were drilled in Sugar Grove Township with average initial oil productions of 11 bbls. per day, and five wells in Eldred Township with average initial oil productions of 13 bbls. per day. Nine other oil wells were drilled in the county with average initial productions of 7 bbls. per day.

TABLE 5. Shallow-Sand Wells Deepened in Pennsylvania in 1957 *

County	<u>Total</u>		No. of Wells	<u>Gas</u>		No. of Wells	<u>Oil</u>		No. of Wells	<u>Dry</u>	
	No. of Wells	Aver. Amount Deepened (Feet)		Aver. Init. Open Flow (MCF per Day)	Aver. Amount Deepened (Feet)		Aver. Init. Prod. (Bbls. per Day)	Aver. Amount Deepened (Feet)		Aver. Amount Deepened (Feet)	
Armstrong	8	1169	6	434	1121	---	---	---	2	1306	
Cameron	<u>1</u>	<u>2045</u>	<u>-</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>1</u>	<u>2045</u>	
Total	9	1267	6	434	1121	---	---	---	3	1551	

* Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.



CRUDE OIL PRICES, PRODUCTION AND WELL COMPLETIONS - BRADFORD FIELD

Figure 2

The average daily oil production in Pennsylvania in 1957 is estimated at 22,495 bbls., as compared with 22,489 bbls. in 1956.

Crude-oil prices fluctuated during the year as shown in table 6.

Table 6. Price per barrel

Date	Northern or Bradford District	Middle or Venango District	Southwestern District
January 1	\$ 4.68	\$ 4.50	\$ 4.21
January 16	4.88	4.70	4.41
July 26	4.65	4.47	4.18
Average	4.77	4.59	4.30

In the Bradford oil field, which includes the Bradford, Guffey, and Burning Well pools, 641 new wells were drilled in connection with secondary-recovery operations, as compared with 617 in 1956, an increase of four percent. Oil production in this field, 86 percent of which area is in Pennsylvania, increased from a daily average of 19,013 bbls. in 1956 to 19,401 bbls. in 1957, or 2.1 percent. Of the new wells, 577 were located in the Pennsylvania part of the field, and this part contributed 17,653 bbls. of the daily average oil production. This represented 78 percent of the total production in the state for 1957. Crude oil prices, production, and well completions for the Bradford field since 1933 are shown on figure 2.

In the Kane-Clarendon area of southwestern McKean County and eastern Warren County, 52 wells were completed in secondary-recovery projects. In the Venango district of northern Venango and adjacent parts of Warren Counties, twenty-eight new wells were drilled in 1957 and four oil wells drilled deeper, as compared with forty-four new wells and four oil wells drilled deeper in 1956 - all in connection with secondary-recovery oil operations. Of these, 13 were oil wells, 13 air-or gas-intake wells and two were dry holes.

During the year no new shallow-sand oil fields or pools were discovered in Pennsylvania. The daily average oil production of the middle and southwestern districts of Pennsylvania was 4,840 bbls. in 1957, as compared with 5,180 bbls. in 1956, a decline of 7 percent. Seven producing oil wells were drilled in the Clough oil field of central Forest County extending this field to the southwest. The annual production of crude oil in Pennsylvania since 1859 is shown on figure 4.

GENERAL

Two offshore blocks in Lake Erie were leased on September 24, 1957 to New York State Natural Gas Corporation by the Pennsylvania Department of Forests and Waters, which has jurisdiction over oil and gas leasing offshore in Pennsylvania's offshore portion of the lake. Thus Pennsylvania became the first border state of the Great Lakes to lease offshore acreage for oil and gas exploration, although for several years offshore wells have been drilled on the Canadian side of the lake. The two blocks total 35,710 acres, with 19,130 acres in the western block (No. 1), and 16,580 acres in No. 2, the eastern block. Plate 4 shows

the blocks leased for oil and gas exploration. An 18 month drilling commitment (Ordovician-Trenton test) is required for the first well in each block. Since drilling in the great lakes is confined to the warmer months of the year, the two wells will be spudded in during the early part of 1958. They will probably be basement tests.

There were two specific bills before Pennsylvania's last legislature session; one was a proposal to institute conservation measures in the petroleum industry; the other, a proposal to provide a magnetometer survey of the northwestern part of the state including Pennsylvania's offshore acreage. Neither bill was reported out of committee when the legislature recessed. It is very likely that bills similar to the two on which no action was taken by the last legislature will be re-submitted. Current regulations pertaining to the oil and gas industry in Pennsylvania are Acts 225, 322, 352, and 570, and the rules and regulations of the Sanitary Water Board of Pennsylvania relating to the disposal of waste from oil and natural gas wells.

No new gas fields were discovered on State Forest Lands during the year. The producing fields on these lands produced 13,182,989 MCF of gas or 12 percent of the total gas production in Pennsylvania for 1957. The total oil and gas income from State Forest lands was approximately one half of that received in 1956. With hopes of offsetting the decline in production, several state tracts were leased during the year to encourage drilling in untested areas of Somerset, Clearfield, and Elk Counties, as well as offshore in Lake Erie.

A sudden flurry of leasing took place in Crawford County along the Ohio State line near the close of the year when Scribner No. 1, drilled by Benedum Trees Oil Company, in Ashtabula County, Ohio (six miles from Pennsylvania), came in as a new oil field wildcat with production from the Red Medina. Since this discovery, two wildcat wells have been started along the Ohio line in Pennsylvania.

Major Pennsylvania companies kept two seismic crews busy in western Pennsylvania most of the year. Deep drilling activity in 1958 is expected to maintain about the same level as in 1957, while shallow drilling is expected to decline somewhat.

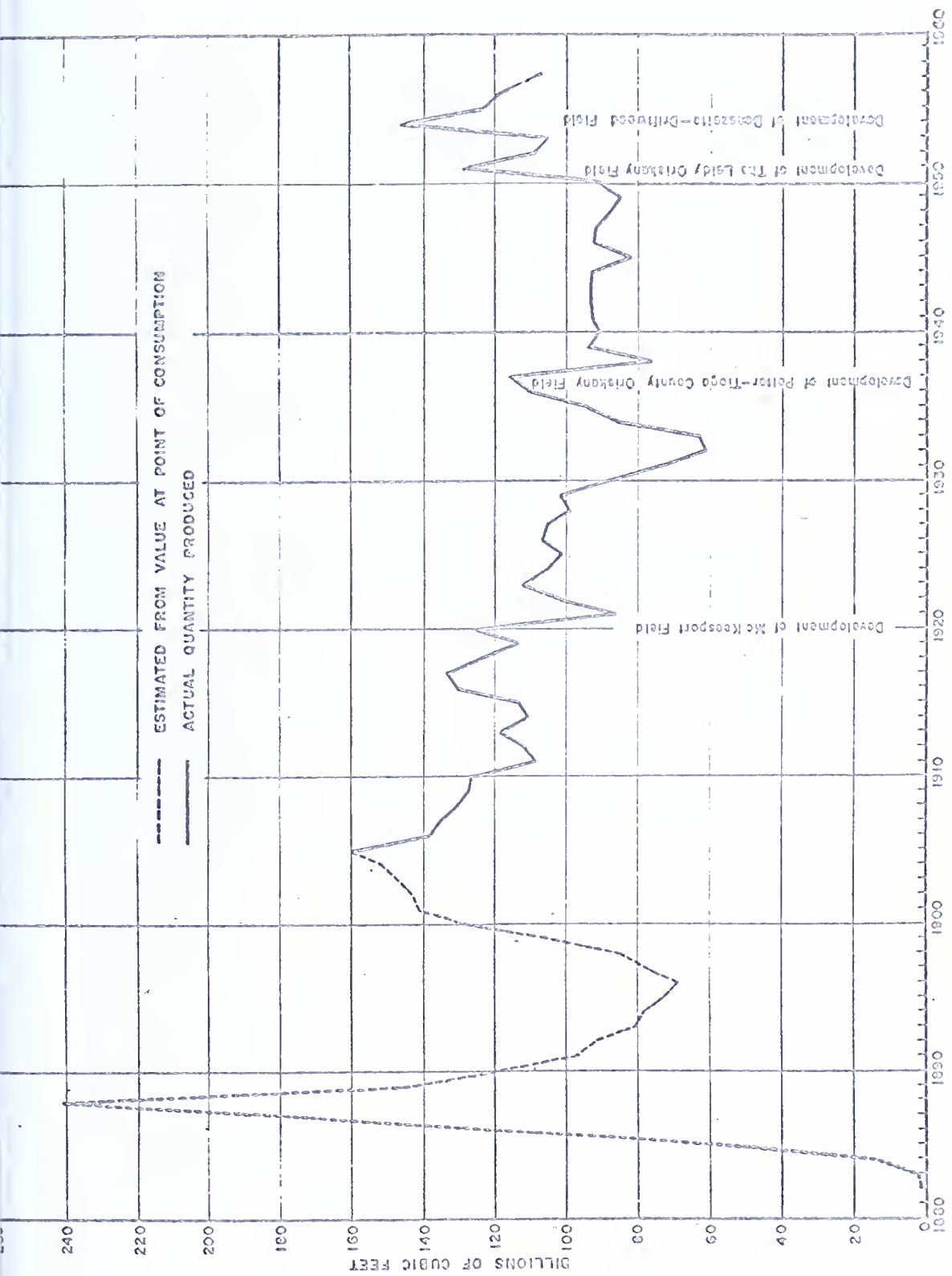
Table 7 compares the 1957 oil and gas production with that of 1956. As of December 31, 1957 the proven recoverable reserves of crude oil were 126,490,000 bbl. and 853,595 millions of cubic feet of gas. The annual production of natural gas in Pennsylvania is shown on figure 3.

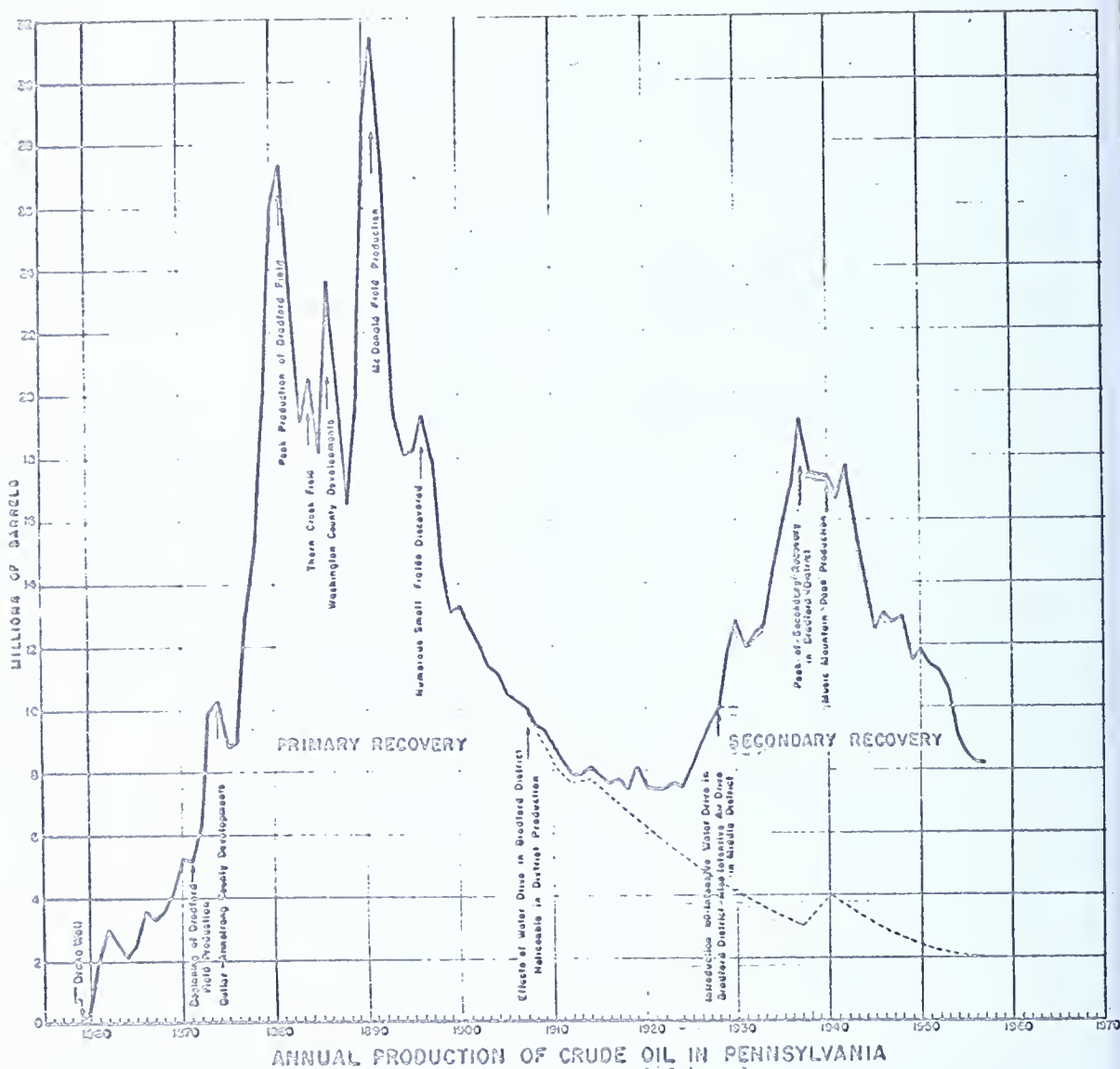
Table 7. Production in Pennsylvania, 1957

	1956	1957	Cumulative total to 12/31/1957
Oil (bbls.)	8,231,000	8,210,000	1,202,598,000
Gas (MCF)	118,416,000	107,004,000	7,066,913,000

ANNUAL PRODUCTION OF NATURAL GAS IN PENNSYLVANIA

Figure 3





ANNUAL PRODUCTION OF CRUDE OIL IN PENNSYLVANIA

Figure 4

The proven gas reserve figure shows an increase of 141,521 millions of cubic feet from extensions and revisions, 14,880 millions of cubic feet from discoveries of new fields and new pools in old fields, and 27,906 millions of cubic feet net change in underground storage. The reserve figure also includes 353,922 millions of cubic feet in underground storage. There are approximately 52 natural gas storage fields in Pennsylvania. The largest storage field is the Oakford field in Westmoreland County with a storage capacity of 110,758 millions of cubic feet. Pennsylvania is the leading storage state with an ultimate capacity for more than 535,000 millions of cubic feet of natural gas when three storage fields now under way are completed.

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TABLE 1. SUMMARIZED RECORD OF DEEP WELLS DRILLED IN PENNSYLVANIA IN 1957
ELEVATIONS AND DEPTHS ARE IN FEET

COUNTY	Bedford	Blair	Cameron	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield
MAD NUMBER	1	2	3	4	5	6	7	8	9
NAME OF WELL	D.H. Miller 2	Edward Bigley 1	The Sylvania Corp. 1	Colvin Bean 1	Bailey 1	Barney Bailey 1	P.R. Bailey 1	Baker Run Reserve, 1	Baker Run Reserve, 2
OPERATOR	New York State Nat. Gas. Corp.	Holidaysburg Gas Co.	Fairman Drilling Co.	T.W. Phillips Gas & Oil Co. and John Fox	Kata Gas & Oil Co.	New York State Nat. Gas. Corp.	Harry Brunt 1	F.C. Deemer 1	F.C. Deemer
TOWNSHIP	Monroe	Allegheny	Gibson	Brady	Union	Union	Union	Huston	Huston
SQUADRANGLE	Clearville 3	Holidaysburg	Benezette 256	Dubois 1	Penfield 44	Penfield 49	Penfield 70	Penfield 93	Penfield 104
LATITUDE	.82 mi. N. 39° 50'	1.97 mi. N. 40° 25'	1.95 mi. S. 41° 25'	.06 mi. W. 41° 00'	.40 mi. S. 41° 05'	2.14 mi. N. 41° 05'	2.14 mi. N. 41° 05'	2.15 mi. S. 41° 10'	1.80 mi. S. 41° 10'
LONGITUDE	.70 mi. W. 78° 20'	.51 mi. E. 78° 25'	.07 mi. W. 78° 15'	.35 mi. W. 78° 45'	.76 mi. W. 78° 40'	1.04 mi. E. 78° 40'	1.60 mi. E. 78° 40'	1.71 mi. E. 78° 40'	1.80 mi. E. 78° 40'
DATE COMPLETED	12-14-57	9-13-57	3-1-57	1-18-57	2-15-57	3-28-57	8-14-57	10-19-57	12-14-57
ELEVATION	98.5		1708	1563	1739	1750	1923	1729	1490
TULLY	absent		6125-	6470-6570	6415 -	6722 -	6665 -	6504 -	6445 -
ONONDAGA	4610 -		6750 -	7237 - Chert, 7263 - SG at 7269	7080 - Chert, 7098 -	7349 - 7360 Chert, 7360 - SG at 7363	7291 - Chert, 7305 -	7210 - Chert, 7211 -	7046 - Chert, 7062 -
ORISKANY	4750 - Gas, 4834, 4855 and 4857		6774 - 100 Mcf gas		7154 - 7159 Gas	7417 - 7443 SG at 7421	7361 - 7373 Gas	7265 - 7287 Gas	7111 - 7135 Gas
HELDENBERG									
SALINA									
LOCKPORT									
ALBION									
WATERFORD									
COLEMAN									
USEFUL INFORMATION REACHED	4893	1700	6808	7273	7169	7444	7376	7258	7135
REMARKS	Oriskany 1,427 Mcf gas after frac R.P. 1920 psi in 4 days Discovery Well	Juniata Spudded in Clinton Dry Abandoned	Oriskany 264 Mcf gas after frac RP 3260 psi	Onondaga Est 30 Mcf gas after frac	Helderberg 950 Mcf gas after frac RP 2560 psi in 8 days	Helderberg 2,000 Mcf gas after frac R.P. 3700 psi in 15 hrs.	Helderberg 3,100 Mcf gas after frac R.P. 2700 psi in 35 hrs.	Helderberg 19,500 Mcf gas after frac R.P. 1500 psi in 24 hrs.	Oriskany 1,875 Mcf gas after frac R.P. 2540 psi

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield
MAP NUMBER	21	22	23	24	25	26	27	28	29	30			
NAME OF WELL	City of Dubois 2	City of Dubois 3	DW Conrad 1	Chas M Dawson et ux, No. 1	Fair 1	Helen D S Gordon 1	Helen D S Gordon 2	Helen D S Gordon 3	Gordon & Reiter 1	Gordon & Reiter 2			
OPERATOR	New York State Nat. Gas Corp	New York State Nat. Gas Corp	Manufacturers Light & Heat Co	New York State Nat. Gas Corp	Heller	New York State Nat. Gas Corp	New York State Nat. Gas Corp	New York State Nat. Gas Corp	Godfrey L. Cabot Inc.	Godfrey L. Cabot Inc.			
TOWNSHIP	Union	Union	Union	Union	Union	Huston	Huston	Huston	Huston	Huston			
QUADRANGLE	Penfield 113	Penfield 106	Penfield 94	Penfield 80	Penfield 72	Penfield 47	Penfield 55	Penfield 91	Penfield 81	Penfield 107			
LATITUDE	1.62 mi. N. 41° 05'	2.09 mi. N. 41° 05'	1.36 mi. N. 41° 05'	2.04 mi. S. 41° 10'	1.80 mi. N. 41° 05'	.68 mi. S. 41° 10'	.71 mi. S. 41° 10'	.13 mi. S. 41° 10'	.33 mi. N. 41° 10'	.70 mi. N. 41° 10'			
LONGITUDE	1.05 mi. E. 78° 40'	1.75 mi. E. 78° 40'	1.13 mi. E. 78° 40'	.88 mi. E. 78° 40'	1.07 mi. E. 78° 40'	.35 mi. E. 78° 35'	1.35 mi. E. 78° 35'	1.35 mi. E. 78° 35'	1.88 mi. E. 78° 35'	1.80 mi. E. 78° 35'			
DATE COMPLETED	12-31-57	12-10-57	10-25-57	9-21-57	8-26-57	2-23-57	5-19-57	10-15-57	9-20-57	12-27-57			
ELEVATION	1685	1725	1746	1805	1684	1856	2040	1794	1744	1898			
TULLY	6510 -	6533 -	6455 - 6579	6706 - 6813	6575 -	6650 -	6635 -	6500 -	6430 - 6560	6640 - 6752			
ONONDAGA	7154 - Chert, 7166 -	7183 - Chert, 7198 -	7105 - Chert, 7111 -	7319 - Chert, 7329 -	7205 - Chert, 7220 -	7289 - Chert, 7312 -	7290 - Chert, 7310 -	7150 - Chert, 7165 -	7072 - 7088 Chert, 7088 -	7288 - 7301 Chert, 7301 -			
GRONOVY	7221 - 7239	7264 - 7278	7176 - 7189 Gas	7389 - 7420 Gas of 7393	7283 - 7298 Gas of 7292	7361 - 7380	7357 - 7365	7219 - 7234 Gas, 7220-7234	7199 - 7157 Gas, 7144-7148	7344 - 7358			
HELDENBERG													
SALINA													
LOCKPORT													
ALBION													
	RED MEDIA (GALVA-JET)												
OUEENSTON													
	WHITE MEDIA (WHIMPOOL)												
TOTAL DEPTH	7240	7279	7191	7421	7299	7382	7366	7235	7159	7360			
DEEPEST FORMATION REACHED	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg			
REMARKS	622 Mcf gas after frac R.P. 1400 psi in 5 hrs	1,099 Mcf gas after frac R.P. 1400 psi in 24 hrs	1,900 Mcf gas after frac R.P. 3310 psi in 60 hrs.	5,731 Mcf gas after frac R.P. 2250 psi in 36 hrs	3,250 Mcf gas after frac R.P. 1780 psi in 24 hrs	1,750 Mcf gas after frac R.P. 3705 psi in 53 hrs	3,600 Mcf gas after frac R.P. 2810 psi in 24 hrs	6,800 Mcf gas after frac R.P. 3240 psi in 40 hrs	6,316 Mcf gas after frac R.P. 3050 psi in 78 hrs	7,600 Mcf gas after frac R.P. 3450 psi			

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield
MAP NUMBER	31	32	33	34	35	36	37	38	39	40		
NAME OF WELL	Rex Gray	Green Glen	Green Glen Corp	Green Glen Corp	Milton Hartfield	Glenn W Holly	Howard Huey	W. Kimmel	Thomas M Kirk	Burt E Knorr		
OPERATOR	Swan & Finch Gas Dev. Co.	Hanley & Bird	Manufacturers Light & Heat Co.	New York State Nat. Gas Corp	New York State Nat. Gas Corp	Manufacturers Light & Heat Co.	Hanley & Bird	New York State Nat. Gas Corp	Manufacturers Light & Heat Co.	New York State Nat. Gas Corp		
TOWNSHIP	Union	Brady	Huston	Huston	Brady	Union	Union	Union	Union	Brady		
QUADRANGLE	Penfield 59	Penfield 89	Penfield 50	Penfield 112	Penfield 40	Penfield 69	Penfield 41	Penfield 53	Penfield 60	Penfield 43		
LATITUDE	2.02 mi. N. 41° 05'	.09 mi. N. 41° 05'	.87 mi. N. 41° 10'	2.58 mi. S. 41° 10'	1.20 mi. S. 41° 05'	2.31 mi. N. 41° 05'	.10 mi. S. 41° 05'	2.37 mi. N. 41° 05'	2.08 mi. N. 41° 05'	2.37 mi. S. 41° 05'		
LONGITUDE	1.04 mi. E. 78° 40'	1.00 mi. W. 78° 40'	.10 mi. E. 78° 35'	.73 mi. E. 78° 40'	2.15 mi. W. 78° 40'	1.57 mi. E. 78° 40'	.70 mi. W. 78° 40'	1.32 mi. E. 78° 40'	.85 mi. E. 78° 40'	.90 mi. E. 78° 45'		
DATE COMPLETED	6-19-57	10-15-57	12-23-57	12-31-57	1-17-57	8-12-57	1-11-57	4-15-57	6-24-57	2-7-57		
ELEVATION	1733	1931	1373	1756	1711	1857	1787	1827	1761	1838		
TULLY	6650 -	6550 -	6305 - 6395	6730 -	6405 - 6560	6800 - 6924	6461 -	6840 - 6960	6730 -	6630 - 6750		
ONONDAGA	7297 - Chert, 7377 -	7183 - Chert, 7191 -	7073 - Chert, 7083 -	7339 - Chert, 7352 -	7042 - 7058 Chert, 7058-7108	7467 - Chert, 7478 -	7216 - Chert, 7234 -	7460 - 7480 Chert, 7480-7537	7367 - 7381 Chert, 7381 -	7244 - 7258 Chert, 7258-7369		
ORISKANY	7360 - 7384 Gas, 7364	7242 - 7260	7149 - 7160 S.W. of 7154	7399 - 7425	7108 - 7128 Gas at 7114	7538 - 7558 Gas at 7538-40	7300 - 7318	7537 - 7560 Gas at 7537	7437 - 7460	7309 - 7329 Gas		
HELCROBERG												
SALINA												
LOCKPORT												
ALBION	RED MEDINA (GRIMSBY)											
	WHITE MEDINA (WHIRLPOOL)											
QUEENSTON												
TOTAL DEPTH	7390	7331	7167	7426	7132	7559	7325	7561	7462	7330		
DEEPEST FORMATION REACHED	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg		
RESULT	6.631 Mcf gas after frac R.P. 2500 psi. in 48 hrs.	1800 Mcf gas after frac R.P. 2375 psi.	Spout of gas 3400 ft of salt water Abandoned	1641 Mcf gas after frac R.P. 1160 psi.	1750 Mcf gas after frac R.P. 1950 psi. in 5 days	4500 Mcf gas after frac R.P. 2750 psi. in 48 hrs.	500 Mcf gas after frac R.P. 2550 psi. in 88 hrs.	5500 Mcf gas after frac R.P. 3705 psi. in 45 hrs.	3421 Mcf gas after frac R.P. 2425 psi. in 24 hrs.	880 Mcf gas after frac R.P. 2960 psi. in 6 1/2 days		

COUNTY	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield
MAP NUMBER	41	42	43	44	45	46	47	48	49	50		
NAME OF WELL	M N Labarde	Lafayette College, 1	H LaRoch	Emery Miller	W. Miller	Edna Nolder	AL Orner, et al	A.L. Orner	S.E. Orner	Sarah Orner		
OPERATOR	C Heller	Rockton Drilling Co	Manufacturers Light & Heat Co	Devonian Oil Co and Fairman Drilling Co	Harry Brunt	James Drilling Co	New York State Nat. Gas Corp	T.W. Phillips Gas & Oil Co	T.W. Phillips Gas & Oil Co	Keta Gas & Oil Co.		
TOWNSHIP	Union	Union	Union	Union	Union	Brady	Union	Union	Union	Union		
QUADRANGLE	Penfield 100	Penfield 84	Penfield 85	Penfield 74	Penfield 78	Penfield 48	Penfield 54	Penfield 102	Penfield 99	Penfield 82		
LATITUDE	41° 05'	41° 05'	41° 05'	41° 05'	41° 05'	41° 05'	41° 05'	41° 05'	41° 05'	41° 05'		
LONGITUDE	78° 40'	78° 40'	78° 40'	78° 40'	78° 40'	78° 40'	78° 40'	78° 40'	78° 40'	78° 40'		
DATE COMPLETED	11-29-57	8-27-57	9-20-57	8-29-57	9-17-57	3-6-57	5-17-57	12-13-57	11-25-57	9-20-57		
ELEVATION	1850	1752	1704	1787	1717	1843	1803	1752	1816	1733		
TYPE	6541 -	6665 =	6555 = 6683	6650 =	6569 =	6625 =	6003 = 6602	6702 = 6525	6741 = 6801	6602 -		
ENGINEER	7165 - Chert, 7200 -	7322 - Chert, 7337 -	7197 - Chert, 7208 -	7250 - Chert, 7260 -	7171 - Chert, 7182 -	7272 - Chert, 7280 =	7309 = 7324 Chert, 7324 = 7380	7350 - Chert, 7374 -	7421 = 7443 Chert, 7443 = 7457	7261 - Chert, 7269 -		
ORIGINARY	7263 - 7276	7382 - 7400	7264 - 7282	7324 -	7244 - Gas of 7248	7357 - 7375 Gas	7380 - 7401 Gas	7437 - 7457 Gas of 7452	7499 - 7522	7333 - 7356		
HELDERBERG												
SALINA												
LOCKPORT												
ALCOON												
QUEENSTON												
TOTAL DEPTH	7279	7403	7285	7343	7255	7378	7402	7465	7523	7361		
DEEPEST FORMATION REACHED	Helderberg	Helderberg	Helderberg	Oriskany	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg		
RESULT	500 Mcf gas after frac R.P. 2100 psi in 40 hrs.	3900 Mcf gas after frac R.P. 2800 psi in 72 hrs.	2,700 Mcf gas after frac R.P. 1825 psi in 48 hrs.	14,300 Mcf gas after frac R.P. 2050 psi in 14 hrs.	10F 65,000 Mcf gas R.P. 2180 psi in 9 hrs.	4,600 Mcf gas after frac R.P. 2875 psi in 24 hrs.	5,325 Mcf gas after frac R.P. 3480 psi in 96 hrs.	25 Mcf gas after frac R.P. 654 psi in 1 hr.	1,853 Mcf gas after frac R.P. 654 psi in 1 hr.	25 Mcf gas and salt water after frac Abandoned		

SUMMARIZED RECORD OF DEEP WELLS (continued)

TABLE 1
SHEET 6

COUNTY	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield
MAP NUMBER	51	52	53	54	55	56	57	58	59	60			
NAME OF WELL	Pa Tract 60 New York State Nat. Gas Corp	Pa Tract 62 New York State Nat. Gas Corp	Pa Tract 63 New York State Nat. Gas Corp	Pa Tract 63 New York State Nat. Gas Corp	Pa Tract 63 New York State Nat. Gas Corp	Pa Tract 63 New York State Nat. Gas Corp	Pa Tract 63 New York State Nat. Gas Corp	Pa Tract 63 New York State Nat. Gas Corp	Pa Tract 63 New York State Nat. Gas Corp	Pa Tract 63 New York State Nat. Gas Corp	Pa Tract 63 New York State Nat. Gas Corp	Pa Tract 63 New York State Nat. Gas Corp	Pa Tract 63 New York State Nat. Gas Corp
OPERATOR	Union	Pine	Huston	Huston	Huston	Huston	Huston	Huston	Huston	Huston	Huston	Huston	Huston
TOWNSHIP	Union	Pine	Huston	Huston	Huston	Huston	Huston	Huston	Huston	Huston	Huston	Huston	Huston
QUADRANGLE	Penfield 62	Penfield 108	Penfield 45	Penfield 46	Penfield 50	Penfield 92	Penfield 75	Penfield 86	Penfield 103	Penfield 61	Penfield 103	Penfield 86	Penfield 103
LATITUDE	.65 mi N. 41°05'	1.28 mi N 41°05'	.95 mi S 41°10'	.93 mi S 41°10'	1.55 mi S 41°10'	2.08 mi S 41°10'	2.77 mi S 41°10'	2.70 mi S 41°10'	.28 mi S 41°10'	1.01 mi N 41°05'	.28 mi S 41°10'	2.70 mi S 41°10'	.28 mi S 41°10'
LONGITUDE	1.18 mi W. 78°35'	.30 mi E. 78°35'	.84 mi E. 78°35'	1.15 mi E. 78°35'	.43 mi E. 78°35'	.36 mi E. 78°35'	1.70 mi E. 78°40'	1.20 mi E. 78°40'	1.62 mi E. 78°35'	.09 mi W. 78°40'	1.62 mi E. 78°35'	1.20 mi E. 78°40'	.09 mi W. 78°40'
DATE COMPLETED	7 - 8 - 57	12 - 31 - 57	3 - 1 - 57	2 - 23 - 57	3 - 28 - 57	11 - 1 - 57	10 - 10 - 57	11 - 1 - 57	12 - 6 - 57	7 - 6 - 57	12 - 6 - 57	11 - 1 - 57	12 - 6 - 57
ELEVATION	1932	2103	1941	2022	1798	1803	1830	1732	1785	1513	1785	1732	1785
TULLY	6277 - 6412	6419 -	6584 -	6605 - 6722	6388 - 6500	6340 -	6882 - 7000	6600 -	6435 -	6310 -	6435 -	6600 -	6435 -
ONONDAGA	6963 - 6975 Chert 6915 -	7101 - Chert 7113 -	7295 - 7316 Chert 7316 -	7258 - 7272 Chert 7272 - 7321	7024 - 7044 Chert 7044 - 7094	6990 - Chert 7005 -	7510 - 7531 Chert 7531 -	7205 - Chert 7216 -	7085 - Chert 7102 - 7103	6933 - Chert 6945 -	7085 - Chert 7102 - 7103	7205 - Chert 7216 -	7085 - Chert 7102 - 7103
ORISKANY	7037 - 7040 SG at 7037	7166 - 7172	7367 - 7379	7321 - 7331 Gas	7094 - 7102 Gas at 7097	7057 - 7062	7589 - 15 Mcf gas 515 gals SG at 7592	7267 - 7298	7158 - 7172	7009 - 7033	7158 - 7172	7267 - 7298	7158 - 7172
HELDERBERG													
SALINA													
LOCAPORT													
ALBION	RED MEDINA (GRIMSDY)												
	WHITE MEDINA (WHIRLPOOL)												
DUENSTON													
TOTAL DEPTH	7045	7173	7382	7332	7103	7063	7605	7299	7180	7035	7180	7299	7180
DEEPEST FORMATION REACHED	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Oriskany	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg
RESULT	18 Mcf gas after frac Abandoned	184 Mcf gas after frac R.P. 3740 psi in 65 hrs	3,243 Mcf gas after frac R.P. 2940 psi in 36 1/2 hrs	4,800 Mcf gas after frac R.P. 3750 psi in 65 hrs	4,115 Mcf gas after frac R.P. 3340 psi in 45 hrs	380 Mcf gas after frac R.P. 1300 psi in 19 hrs	Show of gas and salt water in Oriskany Abandoned	11,401 Mcf gas after frac R.P. 1420 psi in 25 hrs	3,100 Mcf gas after frac R.P. 2510 psi in 24 hrs	2,500 Mcf gas after frac R.P. 3460 psi in 18 hrs	3,100 Mcf gas after frac R.P. 2510 psi in 24 hrs	11,401 Mcf gas after frac R.P. 1420 psi in 25 hrs	3,100 Mcf gas after frac R.P. 2510 psi in 24 hrs

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield
MAP NUMBER	61	62	63	64	65	66	67	68	69	70		
NAME OF WELL	Schoff 2	C.G. Schwemmer 1	W.L. Shaw 1	Sure Shot Land & Gun Club	Sure Shot Land & Gun Club	Sure Shot Land & Gun Club	D. Swope et al 1	Vasbinder 1	Jesse U. Weber 1	John Wells 1		
OPERATOR	Devonian Gas & Oil Co.	New York State Nat Gas Corp.	Manufacturers Light & Heat Co.	The Sylvania Corp.	The Sylvania Corp.	The Sylvania Corp.	New York State Nat Gas Corp.	Swan & Finch Gas Dev. Co.	New York State Nat Gas Corp.	Fairman Drilling Co.		
TOWNSHIP	Union	Union	Union	Union	Union	Union	Brody	Union	Union	Union		
QUADRANGLE	Penfield 95	Penfield 96	Penfield 79	Penfield 66	Penfield 76	Penfield 98	Penfield 65	Penfield 83	Penfield 97	Penfield 42		
LATITUDE	1.33 mi. N. 41° 05'	2.44 mi. S. 41° 10'	2.13 mi. N. 41° 05'	2.37 mi. S. 41° 10'	2.55 mi. N. 41° 05'	2.23 mi. N. 41° 05'	1.97 mi. S. 41° 05'	2.10 mi. S. 41° 10'	2.45 mi. S. 41° 10'	.48 mi. S. 41° 05'		
LONGITUDE	.15 mi. E. 78° 40'	1.58 mi. E. 78° 40'	1.82 mi. W. 78° 35'	1.30 mi. W. 78° 35'	2.03 mi. E. 78° 40'	1.98 mi. E. 78° 40'	1.05 mi. E. 78° 45'	1.03 mi. W. 78° 35'	.99 mi. E. 78° 40'	.95 mi. W. 78° 40'		
DATE COMPLETED	11 - 5 - 57	12 - 22 - 57	9 - 14 - 57	7 - 27 - 57	9 - 12 - 57	11 - 15 - 57	7 - 26 - 57	7 - 6 - 57	11 - 12 - 57	1 - 24 - 57		
ELEVATION	1811	1743	1872	1807	1761	1761	1761	1598	1750	1886		
TULLY	6681 -	6598 -	6448 - 6545	6680 - 6642	6665 -	6547 - 6622	6590 -	6481 -	6695 - 6765	6516 -		
ONONDAGA	7321 - Chert, 7332 -	7331 - Chert, 7353 -	7082 - Chert, 7092 -	7238 - Chert, 7253 -	7284 - Chert, 7298 -	7181 - Chert, 7194 -	7223 - Chert, 7239 -	7131 - Chert, 7153 -	7274 - 7289 Chert, 7289 - 7341	7136 - Chert, 7159 - 635		
ORISKANY	7389 - 7406	7427 - 60 Mcf gas and salt water, 7447	7149 - 7156	7307 - 7325	7358 - 7378 125 Mcf gas of 7361	7254 - 7271	7296 - 7317	7222 - 7240	7347 - 7379 Gas	7204 - 7212		
HELDERBERG												
SALINA												
LOCKPORT												
ALBION												
QUICKENSTON												
TOTAL DEPTH	7406	7455	7158	7327	7379	7272	7318	7250	7380	7214		
DEEPEST FORMATION REACHED	Oriskany	Oriskany	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg		
RESULT	4,000 Mcf gas after frac R.P. 2475 psi in 40 hrs.	Show of gas and salt water in Oriskany Abandoned	2700 Mcf gas after frac R.P. 3275 psi	3784 Mcf gas after frac R.P. 3500 psi in 18 hrs.	4,881 Mcf gas after frac R.P. 3060 psi in 30 hrs.	2013 Mcf gas after frac R.P. 2450 psi in 60 hrs.	1,283 Mcf gas after frac R.P. 1830 psi in 13 hrs.	771 Mcf gas after frac R.P. 3200 psi in 36 hrs.	4,597 Mcf gas after frac R.P. 1920 psi in 13 hrs.	1,000 Mcf gas after frac		

TABLE 1
SHEET 8

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield
WELL NUMBER	71	72	73	74	75	76	77	78	79	80			
NAME OF WELL	John B. Welty 1	Whitney Realty Co., 1	Whitney Realty Co., 2	Whitney Realty Co., 3	Whitney Realty 4	Whitney Realty 5	Po. Tract 32 5	Po. Tract 32 6	Po. Tract 40 1	Po. Tract 40 2			
OPERATOR	Honley & Bird	Lomeys Exploration Ltd.	Rock-ton Drilling Co.	Swan & Finch Gas Dev. Co.	Lomeys Exploration Ltd.	Lomeys Exploration Ltd.	New York State Nat. Gas Corp.	New York State Nat. Gas Corp.	Manufacturers Light & Heat Co.	Manufacturers Light & Heat Co.			
TOWNSHIP	Union	Huston	Huston	Huston	Huston	Huston	Goshen	Goshen	Goshen	Goshen			
QUADRANGLE	Penfield 56	Penfield 36	Penfield 52	Penfield 51	Penfield 67	Penfield 64	Clearfield 30	Clearfield 35	Clearfield 29	Clearfield 32			
LATITUDE	11 mi. N. 41° 05'	1.78 mi. S 41° 10'	1.75 mi. S 41° 10'	1.05 mi. S 41° 10'	1.42 mi. S 41° 10'	1.41 mi. S 41° 10'	2.00 mi. S. 41° 15'	1.25 mi. S. 41° 15'	2.12 mi. S. 41° 15'	2.26 mi. S. 41° 15'			
LONGITUDE	.05 mi. W. 75° 40'	.23 mi. W. 78° 35'	.85 mi. W. 78° 35'	.18 mi. E. 78° 35'	.06 mi. E. 78° 35'	.35 mi. W. 78° 35'	1.11 mi. E. 78° 25'	1.73 mi. E. 78° 25'	1.13 mi. E. 78° 25'	.80 mi. E. 78° 25'			
DATE COMPLETED	6 - 21 - 57	5 - 31 - 57	4 - 30 - 57	4 - 5 - 57	7 - 26 - 57	7 - 4 - 57	6 - 2 - 57	11 - 19 - 57	4 - 5 - 57	9 - 4 - 57			
ELEVATION	1798	1728	1715	1806	1733	1783	1489	1215	1716	1972			
TULY	6560 -	6405 -	6550 -	6550 -	6440 -	6585 -	5935 - 6015	6074 -	6175 - 6300	6395 - 6510			
ONONDAGA	7334 - Chert, 7354 - 605	7055 - Chert, 7072 -	7184 - Chert, 7198 - 56 to 7245	7183 - Chert, 7200 -	7095 - Chert, 7115 -	7230 - Chert, 7246 -	6625 - 6645 Chert, 6645-6674	6782 - Chert, 6800 -	6868 - Chert, 6891 -	7098 - Chert, 7105 -			
ORISKANY	7433 - 7446	7122 - 7131	7248 - 7260	7252 - 7268	7183 - 7206	7296 - 7314	6674 - 6680 Gas	6831 - 6837	6918 - 6926	7136 - 7142			
HELDERBERG													
SALINA													
LOCKPORT													
ALBION	RED MEDINA (GRIMSDY)												
	WHITE MEDINA (WHIRLPOOL)												
QUEENSTON													
TOTAL DEPTH	7449	7138	7270	7289	7216	7325	6681	6838	6928	7146			
DEEPEST FORMATION REACHED	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg			
RESULT	750 Mf gas after frac RP 3050 psi in 65 hrs.	1650 Mf gas after frac	3,600 Mf gas	3,393 Mf gas after frac RP 3500 psi	1,200 Mf gas after frac	4,547 Mf gas after frac RP 5250 psi in 36 hrs	3,474 Mf gas after frac RP 1243 psi in 3 hrs	3,775 Mf gas after frac RP 1500 psi in 24 hrs	10F 1270 Mf gas RP 240 psi in 72 hrs	3,143 Mf gas after frac RP 3310 psi			

COUNTY	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clinton	Columbia
MAP NUMBER	81	82	83	84	85	86	87	88	89	90		
NAME OF WELL	Po Tract 42 1	Po Tract 42 3	Po Tract 69 1	Shirey 1	McAninch P. Hiser, J. Conti 1	Shively 1	Robbins 1	Po Camelands Tract 178, No 1 1	Geo. A Calhoun et al., No 2 1	Knarr 1		
OPERATOR	Parsons Bros.	Parsons Bros.	Manufacturers Light & Heat Co.	Parsons Bros.	F.C. Deemer 1	F.C. Deemer 1	F.C. Deemer 1	Parsons Bros.	New York State Nat Gas Corp.	Farmers Gas and Oil Co.		
TOWNSHIP	Goshen	Goshen	Lawrence	Bradford	Bell	Bell	Bell	Graham	Leidy	Locust		
QUADRANGLE	Clearfield 31	Clearfield 34	Clearfield 33	Clearfield 36	Punkulawney 16	Punkulawney 15	Cumrainsville 1	Phillipsburg 13	Renovo West 159	Columbia 1		
LATITUDE	2.03 mi. S. 41° 15'	2.00 mi. S. 41° 15'	2.34 mi. N. 41° 10'	2.66 mi. S. 41° 05'	2.72 mi. N. 40° 55'	4.20 mi. S. 41° 00'	4.44 mi. N. 40° 55'	2.23 mi. S. 41° 00'	4.33 mi. S. 41° 25'	2.19 mi. S. 40° 55'		
LONGITUDE	1.95 mi. E. 78° 25'	1.76 mi. W. 78° 20'	1.84 mi. W. 78° 25'	1.54 mi. W. 78° 20'	1.77 mi. W. 78° 45'	1.20 mi. W. 78° 45'	1.3 mi. E. 78° 45'	2.1 mi. E. 78° 15'	7.8 mi. E. 77° 55'	5.8 mi. E. 76° 25'		
DATE COMPLETED	8-12-57	10-26-57	11-1-57	11-29-57	8-27-57	1-19-57	2-13-57	12-11-57	8-17-57	1-12-57		
ELEVATION	1926	2005	1939	1405	1771	1700	2085	1631	1450	890		
TITLE	6378 - 6490	6385 - 6495	6261 - 6382	6815 - 7012	6652 -	6649 -	7005 -	70-3 -	5462 - 5580	1548 - 1701		
ONONDAGA	7062 - 7084 Chart 7084-7113	7126 - 7145 Chart 7145-7177	6956 - Chart 6971-	7750 - Chart 7765-	7374 - SG of 7415	7362 -	7749 -	7990 - Chart 8014 -	6277 - 6291	6225 - 6339		
ONONDAGA	7113 - 7121 Gas of 7113, 7118 Shriver, 7121-	7171 - 7184	7005 - 7009	7800 - 7822 Shriver 7822-	7482 - 7487	7437 - 7444	7819 - Very small SG salt water	8032 - 8045	6291 - 6328 Gas of 6293	Onondaga absent Shriver 6478-6505		
HELDERBERG										5535 - 6795		
VALLEY										Tonoloway, 7032 -		
LOCKPORT												
ACTION												
RED MEDINA (SHIMEDDY)												
WHITE MEDINA (WHEELPOOL)												
QUANTITY	7121	7185	7011	7862	7557	7571	7878	8085	5331	7445		
DATE - DATA	Oris Kanby	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Tonoloway		
REMARKS	2,700 Mcf gas after frac	200 Mcf gas after frac R.P. 145 psi in 60 hrs	39 Mcf gas after frac R.P. 150 psi in 60 hrs Abandoned	Show of gas 7800 - 7805 7807, 7822 7833, 7837 Abandoned	Shot and fraced Dry Abandoned	150 Mcf gas after frac R.P. 3600 psi in 5 days	400 Mcf gas after frac 500 wls SW in 12 hrs Abandoned	Dry Abandoned	4 Mcf gas R.P. 145 psi Salt water 500 ft Abandoned	Dry Abandoned		



TABLE 1
SHEET 10

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY	Crawford	Crawford	Crowford	Elk	Elk	Elk	Erie	Erie	Erie	Erie	Erie	Erie
MAP NUMBER	91	Indian Spring	92	93	94	95	96	97	98	99	100	
NAME OF WELL			BJOWczykosky	Dents Run Coal Co., No. 1	Roland Dill	Logan L. Bond	A. Bobb	Fornen	H. Fogelbock	Presque Isle Broodcasting Co.	Renderly	
OPERATOR	George Hall et al	Jack Morrison et al	Richmond	Richard Hill et al	J.C. Walker	New York State Nat Gas Corp	V.R. Stephens et al	Penna Gas Co.	D. Cowan et al	Nichols	Stevenson Dev. Co.	
TOWNSHIP	Spring	Richmond	Benezette	Benezette	Benezette	Horton	Summit	Summit	Summit	Summit	Summit	
QUADRANGLE	Girard 22	Cambridge Springs, 7	Benezette 267	Benezette 268	Benezette 268	Penfield II	Erie 105	Erie 105	Erie 104	Erie 102	Erie 101	
LATITUDE	1.86 mi. N 41° 45'	.35 mi. N 41° 45'	202 mi. N 41° 20'	1.50 mi. S 41° 25'	1.50 mi. S 41° 25'	.50 mi. S 41° 15'	1.90 mi. S 42° 05'	2.66 mi. S 42° 05'	2.68 mi. N 42° 00'	2.04 mi. S 42° 05'	1.92 mi. S 42° 05'	
LONGITUDE	1.47 mi. W 80° 20'	.10 mi. W 80° 00'	1.85 mi. E 78° 20'	.84 mi. W 78° 15'	.84 mi. W 78° 15'	.95 mi. E 78° 40'	.10 mi. W 80° 05'	1.39 mi. E 80° 05'	.58 mi. E 80° 05'	2.10 mi. E 80° 05'	.17 mi. E 80° 05'	
DATE COMPLETED	9 - 11 - 57	8 - 2 - 57	5 - 10 - 57	5 - 31 - 57	5 - 31 - 57	3 - 25 - 57	9 - 4 - 57	9 - 4 - 57	7 - 6 - 57	2 - 1 - 57	1 - 4 - 57	
ELEVATION	1074	1372	1029	1570	1570	2343	1125	1286	1315	1278	1168	
TULLY	2187 - 2222	2852 - 2920	5640 -	6082 -	6082 -	5810 - 5910		1919 -	1950 - 2060	1930 -	1810 -	
ONONDAGA	2355 - 2545 Shows gas of 2495	3057 -	6292 -	6702 - Chert, 6725 -	6702 - Chert, 6725 -	6416 - Chert, 6447 - 6491	2012 -	2147 -	2184 -	2144 -	2037 -	
ORISKANY	2551 - 2559 Shows gas and salt water of 2551	3242 - 3245 Shows oil and salt water at 3240	6313 - Shows gas of 6322 Salt water at 6329	6738 - 148 Mcf gas at 6738	6738 - 148 Mcf gas at 6738	6491 - 6500	2263 - Salt water	2382 -	2437 - SG, SW.	2396 - Gas		
HELDERBERG	2558 - 3905 salt water					6521 -						
SALINA	3355 - 3376 Salt water					Shows gas of 6656 - 6668 6672 - 6675						
LOCKPORT												
ALBION	RED MEDINA (GRIMSBY) 3625 - 3650 Gas, 3665 - 3650	3625 - 3650 Gas, 3665 - 3650										
WHITE MEDINA (WHIRLPOOL)												
QUEENSTON												
TOTAL DEPTH	3690	3365	6334	6760	6760	6790	2305	2403	2445	2408	2296	
DEEPEST FORMATION REACHED	Albion	Salina	Oriskany	Oriskany	Oriskany	Salina	Helderberg	Oriskany	Oriskany	Oriskany	Oriskany	
RESULT	916 Mcf gas from Red Medina after frac. RP 1122 psi in 36 hrs Discovery Well	Shot at 3208 Shows oil in Oriskany after shot Abandoned	Dry Abandoned	1,980 Mcf gas after frac in 40 hrs R P 3350 psi	1,980 Mcf gas after frac in 40 hrs R P 3350 psi	Dry below Tully Plugged back to 2311 Sand, 2333 - 2370 535 Mcf gas after frac RP 430 psi, 42 days	Salt water in Oriskany Abandoned	10F 4,700 Mcf gas R P 422 psi in 15 min.	Show of gas salt water in Oriskany Abandoned	10F 146 Mcf gas R P 470 psi in 45 min Well caught fire	15 Mcf gas and salt water Abandoned	

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Indiana	Indiana	Indiana	Indiana	Indiana
WAP NUMBER	101	102	103	104	105	106	107	108	109	110		
NAME OF WELL	B Unger	Applebee	L Thompson	Elbridge	Anno J Bair	Luigi Azzello	Florence Boden et al, No. 1B	Florence Boden et al, No. 2A	Florence Boden et al, No. 2B	De Vinney		
OPERATOR	C Smith	Keta Gas & Oil Co.	Flanigan et al	Allegheny Industries	Columbian Carbon Co	Keta Gas & Oil Co	New York State Nat. Gas Corp	New York State Nat. Gas Corp	New York State Nat. Gas Corp	Manufacturers Light & Heat Co		
TOWNSHIP	Summit	Vinango	Vinango	Washington	Banks	Young	Armstrong	Armstrong	Young	Armstrong		
QUADRANGLE	Erie 107	Northeast 16	Northeast 17	Cambridge Springs, 6	Pennsylvanewy 28	Elders Ridge 17	Elders Ridge 6	Elders Ridge 19	Elders Ridge 22	Elders Ridge 23		
LATITUDE	2.85 mi. S. 42° 05'	2.30 mi. S. 42° 05'	2.58 mi. N. 42° 00'	1.50 mi. S. 41° 55'	1.52 mi. S. 40° 55'	.77 mi. S. 40° 35'	1.15 mi. S. 40° 35'	1.06 mi. S. 40° 35'	1.48 mi. S. 40° 35'	.03 mi. S. 40° 35'		
LONGITUDE	1.05 mi. E. 80° 05'	1.42 mi. E. 79° 55'	1.15 mi. E. 79° 55'	.44 mi. E. 80° 05'	1.98 mi. W. 78° 50'	2.00 mi. E. 79° 20'	1.94 mi. W. 79° 15'	1.80 mi. W. 79° 15'	2.18 mi. W. 79° 15'	1.53 mi. W. 79° 15'		
DATE COMPLETED	8-22-57	3-19-57	4-18-57	11-10-57	4-11-57	5-31-57	1-28-57	5-15-57	7-29-57	7-22-57		
ELEVATION	1308	1448	1420	1413	1967	1177	1112	1141	1214	1300		
TULLY	1949 - 2042	2225 - 2230	2203 - 2306	2473-2593	6780 - 6960	6875 -	6508 - 6720	6575 -	6714 -	6890 - 7010		
ORONDAGA	2170 -	2457 -	2430 -	2708 -	7448 - 7457 Gas Chert, 7457-7528	7520 - Chert, 7545 -	7198 - 7214 Chert, 7214 -	7234 - Chert, 7237 -	7314 - Chert, 7335 -	7558 - Chert, 7584 -		
GRUCKANY	2414 - Gas at 2416 SW, 2423-2425	horizon 2717 - 2720	2685 - 2691	2962 - 2966	7528 - 7538	7682 - 2,000 Mcf gas at 2592	7352 - 7380 400 Mcf gas at 7364	7373 - 7399	7470 - 7498	7750 - 7777		
HELDERBERG		2720 - 2741		2966 - 3352 4 barrels SW of 2076	7538 - 7555							
SALINA		Dolomite 2741 - 2748 Gas, 2748										
LOCUSPORT												
ALGONA												
				4085 - 4160								
LOCUSTON				4160 - 4920								
WELL DEPTH	2425	2753	2740	6840	7555	7692	7381	7401	7500	7793		
WELL AT FORMATION REACHED		Helderberg	Helderberg	Galesburg	Helderberg	Oriskany	Helderberg	Helderberg	Helderberg	Helderberg		
WELL	107,808 Mcf gas R.P. 421 psi in 35 hrs.	300 Mcf gas and salt water after frac R.P. 560 psi, 19 hrs	1 bbl. oil show of gas after frac R.P. 105 psi, 65 hrs Abandoned	Ulta shale 5760 - 5875 Trenton, 5875 - Galesburg, 5873 - salt water at 6630 abandoned	1708 Mcf gas after frac R.P. 3675 psi in 48 hrs	1,150 Mcf gas after frac R.P. 3150 psi in 24 hrs	6,700 Mcf gas after frac R.P. 3840 psi in 49 hrs	1,500 Mcf gas after frac R.P. 2220 psi in 48 hrs	2,421 Mcf gas after frac R.P. 2485 psi in 13 hrs	177 Mcf gas after frac R.P. 2169 psi in 18 hrs		

TABLE 1
SHEET 12

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana
MAP NUMBER	111	112	113	114	115	116	117	118	119	120		
NAME OF WELL	DeVinney	Harry L. George	Wm. George	Wm. George	Laura Graham	J. R. Leorn	Victor Martin	Victor Martin	Martha Neal	Martha Neal		
OPERATOR	Manufacturers Light & Heat Co.	The Peoples Nat. Gas Co.	New York State Nat. Gas Corp.	New York State Nat. Gas Corp.	Sam Jack	New York State Nat. Gas Corp.	T. W. Phillips Gas & Oil Co.	James Drilling Co.	James Drilling Co.	James Drilling Co.		
TOWNSHIP	Armstrong	Armstrong	Armstrong	Armstrong	Armstrong	Young	Armstrong	Armstrong	Armstrong	Armstrong		
SUBDRANGLE	Elders Ridge 12	Elders Ridge 7	Elders Ridge 18	Elders Ridge 16	Elders Ridge 29	Elders Ridge 20	Elders Ridge 5	Elders Ridge 24	Elders Ridge 27	Elders Ridge 28		
LATITUDE	35 mi. S 40° 35'	11 mi. N 40° 35'	17 mi. N 40° 35'	53 mi. N 40° 35'	133 mi. S 40° 35'	99 mi. S 40° 35'	15 mi. S 40° 35'	09 mi. N 40° 35'	82 mi. S 40° 35'	74 mi. S 40° 35'		
LONGITUDE	1-49 mi. W 79° 15'	1-44 mi. W 79° 15'	1-20 mi. W 79° 15'	1-05 mi. W 79° 15'	1-90 mi. W 79° 15'	1-45 mi. E 79° 20'	1-75 mi. W 79° 15'	1-68 mi. W 79° 15'	1-98 mi. W 79° 15'	1-79 mi. W 79° 15'		
DATE COMPLETED	4 - 17 - 57	2 - 4 - 57	8 - 13 - 57	5 - 22 - 57	11 - 24 - 57	7 - 29 - 57	1 - 29 - 57	8 - 4 - 57	9 - 19 - 57	11 - 15 - 57		
ELEVATION	1203	1306	1268	1458	1230	1172	1256	1390	1251	1433		
TULLY	6820 - 7045	6459 - 6980	6904 - 7096	7002 - 7118	6840 - 6980	6940 - 7015	6870 -	6950 -	6895 -	7025 - 7250		
ONONDAGA		7127 - Chert, 7443 -	7735 - 7759 Chert, 7713 - 8060 Shale of gas.	7564 - Chert, 7579 -	7493 - Chert, 7508 - Gas	7465 - 7483 Chert, 7483 - 7620	7380 - Chert, 7428 -	7500 - Chert, 7520 - 7556				
ORISKANY		7578 - 7607 Gas at 7579	8070 - 8103	7710 - 7732 Gas		7620 - 7648 Gas	7532 - 7555 Gas, 7540 - 7555	7656 - 7676				
HELDERBERG												
SALINA												
LOCKPORT												
ALBION	RED MEDINA (GRIMSBY)											
	WHITE MEDINA (WHIRLPOOL)											
QUEENSTON												
TOTAL DEPTH	7759	7610	8105	7736	7529	7649	7565	7677	7995	7900		
DEEPEST FORMATION REACHED	Hamilton	Helderberg	Helderberg	Helderberg	Onondaga	Helderberg	Helderberg	Helderberg	Hamilton	Hamilton		
RESULT	Dry below Tully Plugged back to frac shallow sand 2,010 Mcf gas RP 645 psi/90 hrs	4,694 Mcf gas after frac RP 3950 psi in 17 hrs	Faced chert and Oriskany also shallow sand at 2710 10 gal S/W at 1750 Abandoned	1,517 Mcf gas after frac RP 3540 psi in 37 hrs.	400 Mcf gas after frac RP 2600 psi. in 4 days	343 Mcf gas after frac RP 3500 psi in 38 days	5,982 Mcf gas after frac RP 3800 psi in 8 days	424 Mcf gas after frac RP 1908 psi in 24 hrs.	Dry below Tully Plugged back to 2356 660 Mcf gas from shallow sand after frac RP 750 psi, 24 hrs	Plugged back 10,100 shallow sand		

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana
MAP NUMBER	121	122	123	124	125	126	127	128	129	130		
NAME OF WELL	C.D. Peddicord 1	R.L.P. Coal Co. 2	R.L.P. Coal Co. 3	R.L.P. Coal Co. 4	R.L.P. Coal Co. 5	CL & W. Stewart 2	Geo. Uncaphor 4	Geo. Uncaphor 5	Geo. Uncaphor 6	Zagurske 1		
OPERATOR	New York State Nat. Gas Corp.	Manufacturers Light & Heat Co.	Manufacturers Light & Heat Co.	Manufacturers Light & Heat Co.	Manufacturers Light & Heat Co.	James Drilling Co.	T.W. Phillips Gas & Oil Co.	T.W. Phillips Gas & Oil Co.	James Shearer Drilling Co.	Mid-Atlantic Oil & Gas Co.		
TOWNSHIP	Armstrong	Young	Young	Young	Armstrong	Armstrong	Armstrong	Armstrong	Armstrong	Armstrong		
SUBDRILLAGE	Elders Ridge 9	Elders Ridge 5	Elders Ridge 21	Elders Ridge 13	Elders Ridge 26	Elders Ridge 25	Elders Ridge 10	Elders Ridge 14	Elders Ridge 11	Elders Ridge 15		
LATITUDE	2.59 mi. N. 40° 35'	1.23 mi. S. 40° 35'	2.06 mi. S. 40° 35'	1.62 mi. S. 40° 35'	1.22 mi. S. 40° 35'	.93 mi. S. 40° 35'	.70 mi. S. 40° 35'	.45 mi. S. 40° 35'	.43 mi. S. 40° 35'	.90 mi. S. 40° 35'		
LONGITUDE	.14 mi. W. 79° 15'	1.73 mi. E. 79° 20'	1.75 mi. E. 79° 20'	1.77 mi. E. 79° 20'	2.10 mi. W. 79° 15'	1.77 mi. W. 79° 15'	2.03 mi. W. 79° 15'	1.68 mi. W. 79° 15'	2.03 mi. W. 79° 15'	1.21 mi. W. 79° 15'		
DATE COMPLETED	2 - 3 - 57	1 - 17 - 57	7 - 6 - 57	4 - 12 - 57	9 - 20 - 57	8 - 29 - 57	3 - 8 - 57	5 - 16 - 57	3 - 28 - 57	5 - 10 - 57		
ELEVATION	1135	1182	1173	1221	1243	1178	1213	1457	1314	1426		
TULLY	6900 - 6995	6867 - 6985	6683 - 6785	6855 - 6961	6735 - 6845 6912 - 6987	6762 -	6845 - 6900	6985 -	6870 -	7430 -		
ONONDAGA	7474 - 7488 Chert, 7488-7621	7445 - Chert, 7473-	7235 - Chert, 7255 -	7460 - Chert, 7484-	7507 - Chert, 7526-	7305 - Chert, 7325- Gas at 1325	7348 - Chert, 7365- Gas	7550 - Chert, 7570-	7515 - Chert, 7530-	8040 - Chert, 8064-		
ORISKANY	7621 - 7649	7616 - 7635 57' of gas at 1616	7395 - 7408 60' of gas at 7400	7790 - 7808	7747 - 7760	7375 - 7400	7495 - 7520	7117 - 7737 Gas at 7718	7685 -	8180 - 8203		
FIELDING							7520 -					
SALINA												
LOCKPORT												
ALBION												
ALBION												
QUEENSTON												
TOTAL DEPTH	7650	7711	7411	7824	7768	7590	7600	7750	7720	8203		
DEEPEST FORMATION REACHED	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg		
RESULT	1,200 Mcf gas after frac R.P. 4050 psi in 72 hrs.	2,381 Mcf gas after frac R.P. 3280 psi in 15 hrs.	1056 Mcf gas after frac R.P. 3165 psi in 72 hrs.	Gas, 7710-7615 155 Mcf after frac R.P. 3400 psi in 4 hr.	23 Mcf gas at Chert & Onondaga Plugged back to fract shallow sand R.P. 5975 psi, 76 hrs.	4,100 Mcf gas after frac R.P. 2650 psi in 16 hrs.	4619 Mcf gas after frac R.P. 3225 psi in 23 hrs.	681 Mcf gas after frac R.P. 2575 psi in 48 hrs.	1,103 Mcf gas after frac	Plugged back to frac shallow sand Abandoned		

TABLE 1
SHEET 14

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Indiana	Jefferson	Jefferson	Jefferson
RAP NUMBER	131	132	133	134	135	136	137	138	139	140	Jefferson
NAME OF WELL	Fred A. Musser	Silas C. Streams	Bethlehem Cuh Iron Mines Co	Jess Ober	Sam Hutchinson	J H Stewart	Ray C Conrad et al, No. 1	Harry Kinolp	Hornet McClure	Sara E. McCormick	Jefferson
OPERATOR	Columbian Carbon Co	Columbian Carbon Co	Felmont Oil Corp.	Pittsburgh Plate Glass Co.	Columbian Carbon Co.	T W Phillips Gas & Oil Co.	Columbian Carbon Co	Fairman Drilling Co.	Columbian Carbon Co	T W Phillips Gas & Oil Co.	Jefferson
TOWNSHIP	Armstrong	Washington	Buffington	Pine	E. Wheatfield	Brush Valley	Goshill	Goshill	Goshill	Goshill	Jefferson
QUADRANGLE	Indiana	Indiana	Barnesboro	Barnesboro	New Florence	New Florence	Punkstowney	Punkstowney	Punkstowney	Punkstowney	Jefferson
LATITUDE	1.68 mi. S 40° 40'	2.5 mi. S 40° 45'	.70 mi. N. 40° 30'	1.16 mi. N. 40° 35'	2.70 mi. N. 40° 25'	1.01 mi. S 40° 30'	.20 mi. S. 40° 55'	1.60 mi. N. 40° 55'	2.13 mi. N 40° 55'	.47 mi. N. 40° 55'	Jefferson
LONGITUDE	.60 mi. E 79° 15'	1.44 mi. W 79° 10'	.31 mi. E. 79° 00'	.77 mi. W. 78° 55'	2.15 mi. E. 79° 05'	1.04 mi. W. 79° 00'	.28 mi. W. 78° 50'	.38 mi. E. 78° 50'	1.15 mi. E. 78° 50'	.60 mi. W. 78° 50'	Jefferson
DATE COMPLETED	5 - 24 - 57	9 - 25 - 57	10 - 15 - 57	4 - 8 - 57	9 - 6 - 57	7 - 11 - 57	5 - 10 - 57	3 - 10 - 57	2 - 9 - 57	1 - 17 - 57	Jefferson
ELEVATION	1343	1162	2014	1932	1584	1723	1953	1604	1824	1887	Jefferson
TULLY	7148 - 7245	6840 - 6940	7375 - 7420	7513 - 7535	7356 - 7395	7115 - 7140	6835 - 7000	6500 -	6614 - 6794	6818 - 6960	Jefferson
ONONDAGA	7735 - Chert, 7748 - SG. of 7752	7441 - 7455 Chert, 7555 - 7563 Chert, 7674 - 7726	8114 - 8128 Chert, 8128 -	8282 - Chert, 8296 -	8107 - 8128 Chert, 8128 - SG. of 8143, 8146	7900 - 7920 Chert, 7920 - Gas. of 7933	7528 - 7546 Chert, 7546 - SG. of 7552, 7556	7200 -	7372 - 7392 Chert, 7392, 7415 Chert, 7419, 7437, 7455	7494 -	Jefferson
ORISKANY	7875 - 7897	7455 - 7554 SW 7553 - 7574 7726 - 7740	8227 -	8434 - SG. SW of 8457	8355 - 8367		7618 - 7628	7285 - 7293	7505 - 7516	7594 - 7601	Jefferson
HELDERBERG					8377 -		7628 -				Jefferson
SALINA											Jefferson
LOCKPORT											Jefferson
ALBION	RED MEDINA (GRIMSDY)										Jefferson
QUEENSTON	WHITE MEDINA (WHIRLPOOL)										Jefferson
TOTAL DEPTH	7905	7740	8227	8506	8388	8005	7633	7310	7604	7606	Jefferson
DEEPEST FORMATION REACHED	Helderberg	Helderberg	Oriskany	Helderberg	Helderberg	Onondaga	Helderberg	Helderberg	Helderberg	Helderberg	Jefferson
RESULT	Fractured chert and shallow sand 953 Mef gas from chert 158 Mef gas from shallow sand	Dry below full Pegged back to fract shallow sand 60 Mef gas AF RP 850 psi, 12 hrs Abandoned	4100 Mef gas after fract RP 4241 psi in 43 hrs	64 Mef gas 2 bbls SW today after fracting chert & Oriskany Abandoned	21 Mef gas 300 ft soil water after frac RP 2600 psi in 8 days Abandoned	101 2358 Mef gas RP 4100 psi in 7 days	569 Mef gas after frac RP 3560 psi in 10 days	1500 Mef gas after frac RP 2510 psi in 6 days	794 Mef gas after frac RP 2450 psi in 48 hrs	1,600 Mef gas after frac RP 3225 psi in 12 days	Jefferson

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY	Jefferson	Jefferson	Jefferson	Jefferson	McKean	Puffer	Puffer	Puffer	Poller
MAP NUMBER	141	142	143	144	145	147	148	149	150
NAME OF WELL	Mosteller 1	Claire Reed 1	Frank M Shesley 2	Stumpf Heirs 1	Mallory and Williams, flol	Ed. Bloss 1	Lyle Torbox 1	Ben Truax 1 (HWS)	Pa Noel 67 1
OPERATOR	Fairman Drilling Co.	McBumme and Sons	Columbian Carbon Co.	Fairman Drilling Co.	Reeder et al	Kune et al	Trans-Eastern Petroleum Co.	New York State Nat. Gas Corp.	New York State Nat. Gas Corp.
TOWNSHIP	Goshill	Goshill	Goshill	Goshill	Corydon	Sweden	Ulysses	Harrison	Stewardson
QUADRANGLE	Punkslawney 30	Punkslawney 21	Punkslawney 26	Punkslawney 25	Kinzua 12	Genesee 136	Genesee 137	Gaines 102	Guleton 24
LATITUDE	53 mi. N 40° 55'	1.78 mi. N 40° 55'	1.06 mi. N 40° 55'	.96 mi. N 40° 55'	.25 mi. S 42° 00'	1.85 mi. S 41° 50'	2.50 mi. S 41° 55'	.72 mi. S 42° 00'	.92 mi. N 41° 30'
LONGITUDE	.63 mi. E 78° 50'	.42 mi. E 78° 50'	.19 mi. E 78° 50'	.15 mi. W 78° 50'	.27 mi. E 78° 50'	.94 mi. E 77° 55'	1.88 mi. E 77° 50'	1.53 mi. E 77° 10'	.03 mi. E 77° 10'
DATE COMPLETED	5 - 21 - 57	5 - 10 - 57	2 - 13 - 57	4 - 8 - 57	12 - 31 - 57	5 - 24 - 57	7 - 26 - 57	1 - 25 - 57	3 - 28 - 57
ELEVATION	1933	1678	1774	1780	2000	2040	2160	1821	1891
TULLY	6765 -	6558 -	6620 - 6790	6639 -		4595 -	4490 - 4538	4001 -	5835 -
ONONDAGA	7480 - Chert, 7496 -	7294 - Chert, 7314 - 200 Mef gas at 1350	7345 - 7358 Chert, 7358 - 7437	7335 - Chert, 7353 -	4230 -	4936 - 4986 Chert, 4987 - 4994	5132 -	4701 -	6672 -
ORISKANY	7566 -	7382 - 7393	7437 - 7442	7420 - 7426	4310 - 4324	4995 - 5023 Show gas at 5022 self water	5158 - 5173 SW of 5162	4735 - 4768 SW 4753 - 4754	6693 - 6713 Gas at 6697
HELDERBERG									
Seneca						Salt, 5370 - 5485			
						Clinton, 6383 -			
ALBANY						6424 - 6456			
						6456 -			
QUEENSTON						6567 -			
TOTAL DEPTH	7369	7425	7460	7428	4401	5275	5192	4775	6713
DEEPEST FORMATION REACHED	Oriskany	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Oriskany
RESULT	200 Mef gas after frac	380 Mef gas after frac R.P. 1360 psi in 11 hrs.	Frased chert and Oriskany - Dry Plugged back with 255 Mef gas from shallow sand RP 1150 psi. 36 hrs.	300 Mef gas from Oriskany after frac. RP 3010 psi in 25 days	2 1/2 bailers soft water in 12 hrs Abandoned	Dry Abandoned	20 Mef gas after shot Abandoned	10 gals soft water in 32 hrs from Oriskany Drilled for gas storage Abandoned	10F 696 Mef gas R.P. 3515 psi in 7 hrs

SUMMARIZED RECORD OF DEEP WELLS (continued)

COUNTY	Potter	Potter	Potter	Potter	Potter	Potter	Snyder	Susquehanna	Susquehanna	Tioga	Tioga
MAP NUMBER	151	152	153	154	155	156	157	158	159	160	
NAME OF WELL	Pa Tract 68 1	Pa Tract 68 2	Pa Tract 71 1	Pa Tract 71 2	Pa Tract 45 5	Moyer 1	Kelley-Hendrickson 1A	Kelley-Hendrickson 1A	B A Griffith et al, No 1	J L Trimmer et al, No 1	
OPERATOR	New York State Nat Gas Corp	New York State Nat Gas Corp	New York State Nat Gas Corp	New York State Nat Gas Corp	New York State Nat Gas Corp	Middle Creek Valley Pross Co	Gas Well Supply Co	Gas Well Supply Co	New York State Nat Gas Corp	New York State Nat Gas Corp	
TOWNSHIP	Stewardson	Stewardson	Stewardson	Stewardson	Stewardson	Center	Chaconut	Chaconut	Clymer	Clymer	
QUADRANGLE	Galeton 25	Galeton 27	Galeton 26	Galeton 28	Renovo East 14	Milfillinburg 4	La Royville 2	La Royville 3	Gaines 103	Gaines 104	
LATITUDE	47° 30' N 41° 30'	1° 5' N 41° 30'	1° 9' N 41° 30'	2° 20' N 41° 30'	44° 30' S 41° 30'	2° 66' N 40° 50'	15° 55' N 41° 55'	17° 55' N 41° 55'	29° 45' N 41° 55'	19° 7' N 41° 50'	
LONGITUDE	30° 30' E 77° 40'	85° 30' E 77° 40'	1° 03' E 77° 40'	1° 35' E 77° 40'	1° 40' W 77° 40'	1° 35' W 77° 05'	1° 58' W 76° 00'	1° 61' W 76° 00'	1° 25' W 77° 30'	2° 08' W 77° 30'	
DATE COMPLETED	3 - 4 - 57	11 - 1 - 57	8 - 26 - 57	11 - 15 - 57	7 - 19 - 57	4 - 19 - 57	6 - 7 - 57	11 - 12 - 57	1 - 16 - 57	2 - 20 - 57	
ELEVATION	1822	1863	1762	1889	1851	703	1625	1655	1647	1699	
TULY	5693 - 5770	5772 -	5630 - 5710	5722 - 5804	5847 -	1540 - 1570	3444 - 3560	3478 - 3594	3541 -	3474 -	
ONONDAGA	6545 - 6561	6627 -	6484 - 6504	6578 -	6703 -	Selinsgrove, 3910 -	5511 -	5538 -	4309 -	4246 -	
ORISKANY	6561 - 6622 Gas at 6564	6644 - 6700 146 Mcf gas	6504 - Gas 6505-6506	6606 - Gas at 6607	6722 - Gas	sandstone absent		5758 - 5776	4326 -	4256	
HELDERBERG						4150 -		5776 -			
SALINA						Tanawalloway, 4700 -					
LOCKPORT											
ALBION											
QUEENSTON											
TOTAL DEPTH	6625	6704	6539	6611	6737	5780	5511	5874	4353	4274	
DEEPEST FORMATION REACHED	Helderberg	Helderberg	Oriskany	Oriskany	Oriskany	Tanawalloway	Onondago	Helderberg	Oriskany	Oriskany	
RESULT	10F 73 Mcf gas R.P. 949 psi in 21 1/2 days	913 Mcf gas offer frac R.P. 2655 psi	10F 4967 Mcf gas R.P. 2805 psi in 47 hrs	10F 40,000 Mcf gas (estimated) R.P. 2231 psi in 24 hrs	167 Mcf gas offer shot R.P. 540 psi in 72 hrs	Salt water in Salina Dry Abandoned	Dry Abandoned	Show of gas in Hamilton Gas pocket in Onondaga Abandoned	Gas Storage Well	Gas Storage Well	

SUMMARIZED RECORD OF DEEP WELLS (continued)

TABLE 1
SHEET 17

COUNTY	Warren	Warren	Westmoreland	Westmoreland	Westmoreland	Westmoreland	Westmoreland	Westmoreland	Westmoreland
MAP NUMBER	161	162	163	164	165	166	167	168	169
NAME OF WELL	Mrs Carl Kester	Shaw	Jas A. Rogers	Benedictine Society, No. 1	W R Dillon	M L Kack	H E Leighty	V Schwarzer	C E Shultz
OPERATOR	Pe Gas Co. No 1529	Biery and Johnson	Felmon Oil Corp	The Peoples Nat. Gas Co.	The Peoples Nat. Gas Co.	The Peoples Nat. Gas Co.	The Peoples Nat. Gas Co.	Keto Gas & Oil Co.	The Peoples Nat. Gas Co.
TOWNSHIP	Brokenstran	Limestone	Unity	Mt Pleasant	Mt Pleasant	Mt Pleasant	Mt Pleasant	Mt Pleasant	Mt Pleasant
QUADRANGLE	Youngsville 4	Tidioute 3	Latrobe 8	Donegal 12	Donegal 13	Donegal 13	Donegal 10	Donegal 9	Donegal 14
LATITUDE	1.52 mi. N. 41° 50'	.91 mi. S. 41° 40'	1.89 mi. N. 40° 15'	2.47 mi. N. 40° 10'	.98 mi. N. 40° 10'	.50 mi. N. 40° 10'	1.17 mi. N. 40° 10'	2.66 mi. S. 40° 15'	1.50 mi. N. 40° 10'
LONGITUDE	1.01 mi. W. 79° 15'	1.85 mi. W. 79° 20'	.06 mi. W. 79° 20'	1.12 mi. E. 79° 25'	.10 mi. W. 79° 25'	.47 mi. W. 79° 25'	.59 mi. E. 79° 25'	.45 mi. E. 79° 25'	.39 mi. E. 79° 25'
DATE COMPLETED	7 - 24 - 57	11 - 1 - 57	5 - 20 - 57	5 - 4 - 57	9 - 26 - 57	9 - 13 - 57	3 - 8 - 57	4 - 9 - 57	9 - 5 - 57
ELEVATION	1262	1708	1733	1883	2013	1840	2129	1570	1772
TULLY	3165 -	4155 - 4208	7643 - 7822	6656 - 6730	6389 - 6970	5834 - 6925	7541 -	7120 -	6550 -
CRONDAGA	3478 - 3580	4448 -		7272 - Chart, 7288 - Gas of 7315	7515 - Chart, 7534 - Gas, 7568, 7600	7455 - Chart, 7479 - Gas of 7490	8425 - Chart, 8480 - 3000 ft. of S. 14	7800 - Chart, 7837 - S.W. of 7837	7207 - Chart, 7226 -
CRIGARY	Horizon 3580 -	4528 - 4535		7427 -					7377 -
WELDERBERG	3585 -								
JALINA	Salt, 3978 - 4216 -	Salt, 4850 - 4899							
LOCAPORT	Wenberg, 4465 - Black water of 4470	5407 - 5676 50 of 5574							
WED MEDINA (WINDMILL)	4709 - 4833 SG 4817, 4829	50 5824 - 5850 SG 5903 - 5930							
WHITE MEDINA (WINDMILL)	4882 - 4886	6012 - 6018							
SUCUNSTON	4886 -	6018 -							
TOTAL DEPTH	4898	9410	7822	7465	7645	7565	8570	7877	7435
DEEPEST FORMATION REACHED	Queenslon	Gatesbury	Tully	Oriskany	Onondaga	Onondaga	Onondaga	Onondaga	Oriskany
RESULT	Dry Abandoned	Trimble, 8297 - Gatesbury, 9112 - Plugged back to true Onondaga Dry Abandoned	Dry Abandoned	6,852 Mef gas after frac	10,116 Mef gas after frac RP 315.0 psi in 24 hrs.	10F 11,365 Mef gas RP 3200 psi in 48 hrs Not traced	Dry below fully Plugged back to Sand 3019 3097 Gas of 3068 170 Mef after frac RP 920 psi, 40 hrs	Salt water rose 3000 ft Abandoned	Gas of 7306 6,154 Mef gas after frac RP 3100 psi in 17 hrs
									Gas of 7363 10F 2,561 Mef RP 3290 psi in 48 hrs



TABLE 1
SHEET 13

SUMMARIZED RECORD OF DEEP WELLS

COUNTY	Westmoreland	Westmoreland	Westmoreland
WELL NUMBER	171	172	173
NAME OF WELL	John E. Beck 2	Sarah W. Esbr 1	Ed Gamble's Tract 42, No. 1
OPERATOR	Snice and Eberly	The Peoples Nat. Gas Co.	Felmont Oil Corp.
TOWNSHIP	Ligonier	Ligonier	Ligonier
QUADRANGLE	Somerset 2	Somerset 4	Somerset 3
LATITUDE	1.20 mi. S. 40° 12'	2.05 mi. S. 40° 15'	7.7 mi. S. 40° 15'
LONGITUDE	1.34 mi. W. 79° 05'	2.00 mi. W. 79° 05'	1.53 mi. W. 79° 05'
DATE COMPLETED	5 - 16 - 57	11 - 15 - 57	11 - 15 - 57
ELEVATION	2845	2767	2574
TULLY	Not recognized	Not recognized	
ONONDAGA	7433 - Chert, 7454 - Gas at 7466	7904 - Chert, 7929 -	
ORISKANY			
NELOERBERG			
SALINA			
LOCKPORT			
ALEXON	RED MEDINA (GRIMSBY)		
	WHITE MEDINA (WHIRLPOOL)		
DUENSTON			
TOTAL DEPTH	7540	8009	8050
DEEPEST FORMATION REACHED	Onondaga	Onondaga	Hamilton
RESULT	10F 6,700 Mcf gas Discovery Well	Salt water at 2001 ft Abandoned	Faulted No recognized markers Show of gas in shallow sand Abandoned

